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**July 1920.**



THE  
NAUTICAL ALMANAC

AND  
ASTRONOMICAL EPHEMERIS

FOR THE YEAR

1922,

FOR THE MERIDIAN

OF THE

ROYAL OBSERVATORY AT GREENWICH

(WITH TWO INSET ECLIPSE MAPS.)

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PUBLISHED BY ORDER OF  
THE LORDS COMMISSIONERS OF THE ADMIRALTY.

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MCMXIX.



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ALPHABETICALLY ARRANGED.

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## ECLIPSE MAPS.

To face page 461. Map of the Annular Eclipse of the Sun, March 27-28, 1922.

To face page 466. Map of the Total Eclipse of the Sun, September 20, 1922.



# P R E F A C E.

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THE contents and the arrangement of the NAUTICAL ALMANAC for the year 1922 are the same generally as those of the preceding year.

The following sections have been supplied from abroad :—

The Moon's longitude, latitude, parallax, semidiameter, right ascension, and declination from San Fernando.

Apparent Places of Polar Stars from Paris.

Apparent Places of Stars marked A. N. or A. E. at the foot of the column from San Fernando and Washington respectively.

Eclipses from Washington and Paris.

Elements of Occultations from Washington.

Jupiter's Fifth Satellite from Washington ; Jupiter's four principal Satellites from Paris ; Saturn's Satellites and Rings from Washington ; Satellites of Uranus and Neptune from Washington.

Physical Ephemerides of Sun, Moon (defective illumination excepted), Mercury, Venus, Mars, and Jupiter from Washington.

The places of the Sun are from NEWCOMB'S TABLES (*Astronomical Papers of the American Ephemeris and Nautical Almanac*, vol. vi., part 1.).

The places of the Moon are from HANSEN'S *Tables de la Lune* with NEWCOMB'S corrections.

The heliocentric places of the planets are from the Tables in the *Astronomical Papers of the American Ephemeris and Nautical Almanac*.

The mean places and proper motions and precessions of the Standard Stars have ordinarily been supplied by the office furnishing the apparent places. For the 83 stars whose apparent places have been calculated in this office, mean places and proper motions have been derived from NEWCOMB'S Catalogue of Fundamental Stars (*Astronomical Papers of the American Ephemeris and Nautical Almanac*, vol. viii., part II.). The names of the stars have in all cases been taken from this Catalogue.

The stellar magnitudes have been taken, with a few exceptions, from *Revised Harvard Photometry*. The magnitudes of the variable stars  $\epsilon$  Aurigæ and  $\alpha$  Orionis have been taken from "A Second Catalogue of Variable Stars" (*Harvard Annals*, vol. lv.). The spectral types have been taken from a manuscript list forwarded by Professor Pickering in 1916.

Since the date of the Preface of the last Almanac, no changes of staff have occurred.

The staff at present consists of :—

*Chief Assistant*.—Bernard Francis Bawtree.

*Assistants*.—John Abner Sprigge, William Fraser Doak, M.A. (Glas.), F.R.A.S., F.R.G.S., Thomas Charlton Hudson, B.A. (Cantab.), F.R.A.S.

P. H. COWELL,  
Superintendent.

*H M. Nautical Almanac Office,  
86 Lee Road, London, S.E. 3.  
July 9, 1919.*

# EXPLANATION OF ASTRONOMICAL SYMBOLS AND ABBREVIATIONS.

☉ The Sun.	♂ Mars.	♌ Conjunction.
☾ The Moon.	♃ Jupiter.	☐ Quadrature.
☿ Mercury.	♄ Saturn.	♌ Opposition.
♀ Venus.	♅ Uranus.	♊ Ascending Node.
☾ or ♂ The Earth.	♆ Neptune.	♋ Descending Node.

<sup>h</sup> Hours.	° Degrees.	N. North. S. South.
<sup>m</sup> Minutes of Time.	' Minutes of Arc.	E. East. W. West.
<sup>s</sup> Seconds of Time.	" Seconds of Arc.	

## SIGNS OF THE ZODIAC.

0. ♈ Aries - - 0°	IV. ♌ Leo - - 120°	VIII. ♐ Sagittarius 240°
I. ♉ Taurus - - 30	V. ♍ Virgo - - 150	IX. ♑ Capricornus 270
II. ♊ Gemini - - 60	VI. ♎ Libra - - 180	X. ♒ Aquarius - 300
III. ♋ Cancer - - 90	VII. ♏ Scorpio - 210	XI. ♓ Pisces - - 330

PRINCIPAL ARTICLES OF THE CALENDAR,  
For the Year 1922.

---

Golden Number	- - - - -	4		Dominical Letter	- - - - -	A
Epact	- - - - -	2		Julian Period (Year of)	- - - - -	6635

FIXED AND MOVABLE FESTIVALS, ANNIVERSARIES,  
&c. &c.

---

Epiphany	- - - - -	Jan. 6		Rogation Sunday	- - - - -	May 21
Septuagesima Sunday	- - - - -	Feb. 12		Ascension Day—Holy Thursday	- - - - -	25
Quinquagesima—Shrove Sunday	- - - - -	26		Birthday of Queen Mary	- - - - -	26
Ash Wednesday	- - - - -	Mar. 1		Birthday of King George V.	- - - - -	June 3
St. David	- - - - -	1		Whit Sunday	- - - - -	4
Quadragesima—1st Sun. in Lent	- - - - -	5		Trinity Sunday	- - - - -	11
St. Patrick	- - - - -	17		Corpus Christi	- - - - -	15
Annunciation—Lady Day	- - - - -	25		Birthday of the Prince of Wales	- - - - -	23
Palm Sunday	- - - - -	April 9		St. John Bapt.—Midsum. Day	- - - - -	24
Good Friday	- - - - -	14		St. Michael—Michaelmas Day	- - - - -	Sept. 29
EASTER DAY	- - - - -	16		St. Andrew	- - - - -	Nov. 30
Low Sunday	- - - - -	23		Birthday of Queen Alexandra	- - - - -	Dec. 1
St. George	- - - - -	23		1st Sunday in Advent	- - - - -	3
Accession of King George V.	- - - - -	May 6		St. Thomas	- - - - -	21
Proclamation of King George V.	- - - - -	9		Christmas Day	- - - - -	25

---

The Year 5683 of the Jewish Era begins on September 23.

The Year 1341 of the Mohammedan Era begins on August 24.

Ramadân (Month of Abstinence observed by the Turks) begins on April 28.

## ERRATA.

*(Continued from p. ix of the Nautical Almanac for 1921)*

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### NAUTICAL ALMANAC FOR THE YEAR 1920.

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Page 171. (Meridian Passage of Neptune on Feb. 25.) *For* 10<sup>h</sup> 39.7<sup>m</sup> *read* 10<sup>h</sup> 29.7<sup>m</sup>.

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### NAUTICAL ALMANAC FOR THE YEAR 1921.

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Page 348. (R.A. of  $\alpha$  Coronæ Borealis on Dec. 35.9.) *For* 21<sup>s</sup>.186 *read* 22<sup>s</sup>.186.

Page 494. (December 13, III. Tr. f.) *For* 7<sup>h</sup> 56<sup>m</sup> *read* 6<sup>h</sup> 56<sup>m</sup>.

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### NAUTICAL ALMANAC FOR THE YEAR 1922.

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Page 71. (Moon's R.A. for June 23<sup>d</sup> 16<sup>h</sup>.) *For* 5<sup>h</sup> 12<sup>m</sup> 17<sup>s</sup>.35 *read* 5<sup>h</sup> 13<sup>m</sup> 17<sup>s</sup>.35.



# 1922.

Mean Noon.	Nutation in R.A. (in time).	The Sun's			The Moon's		
		Horizontal Parallax.	Aberration.	Mean Longitude.	Mean Longitude.	Mean Longitude Ascending Node.	Mean Longitude Perigee.
Jan. 1	+ 0.28	8.95	20.82	280.3587	315.9725	193.6423	149.5692
11	+ 0.30	8.95	20.81	290.2152	87.7365	193.1128	150.6833
21	+ 0.31	8.94	20.80	300.0716	219.5004	192.5832	151.7973
31	+ 0.31	8.93	20.77	309.9281	351.2644	192.0537	152.9114
Feb. 10	+ 0.30	8.92	20.74	319.7846	123.0281	191.5242	154.0254
20	+ 0.28	8.90	20.70	329.6410	254.7923	190.9946	155.1394
Mar. 2	+ 0.25	8.88	20.65	339.4975	26.5563	190.4651	156.2535
12	+ 0.22	8.85	20.60	349.3540	158.3203	189.9355	157.3675
22	+ 0.18	8.83	20.54	359.2105	290.0843	189.4060	158.4816
Apr. 1	+ 0.15	8.80	20.48	9.0669	61.8482	188.8765	159.5956
11	+ 0.11	8.78	20.42	18.9234	193.6122	188.3469	160.7096
21	+ 0.09	8.75	20.36	28.7799	325.3762	187.8174	161.8237
May 1	+ 0.07	8.73	20.31	38.6364	97.1401	187.2878	162.9377
11	+ 0.06	8.71	20.26	48.4928	228.9041	186.7583	164.0518
21	+ 0.06	8.69	20.22	58.3493	0.6681	186.2288	165.1658
31	+ 0.06	8.68	20.19	68.2058	132.4320	185.6992	166.2798
June 10	+ 0.07	8.67	20.16	78.0623	264.1960	185.1697	167.3939
20	+ 0.08	8.66	20.14	87.9187	35.9600	184.6401	168.5079
30	+ 0.10	8.66	20.13	97.7752	167.7240	184.1106	169.6219
July 10	+ 0.11	8.66	20.14	107.6317	299.4879	183.5811	170.7360
20	+ 0.12	8.66	20.15	117.4882	71.2519	183.0515	171.8500
30	+ 0.12	8.67	20.17	127.3446	203.0159	182.5220	172.9641
Aug. 9	+ 0.11	8.68	20.19	137.2011	334.7798	181.9924	174.0781
19	+ 0.09	8.70	20.23	147.0576	106.5438	181.4629	175.1921
29	+ 0.07	8.72	20.27	156.9140	238.3078	180.9334	176.3062
Sept. 8	+ 0.04	8.74	20.32	166.7705	10.0718	180.4038	177.4202
18	0.00	8.76	20.38	176.6270	141.8357	179.8743	178.5343
28	- 0.03	8.78	20.43	186.4835	273.5997	179.3447	179.6483
Oct. 8	- 0.07	8.81	20.49	196.3399	45.3637	178.8152	180.7623
18	- 0.10	8.83	20.55	206.1964	177.1276	178.2857	181.8764
28	- 0.12	8.86	20.61	216.0529	308.8916	177.7561	182.9904
Nov. 7	- 0.14	8.88	20.66	225.9094	80.6556	177.2266	184.1044
17	- 0.14	8.90	20.71	235.7658	212.4195	176.6970	185.2185
27	- 0.14	8.92	20.75	245.6223	344.1835	176.1675	186.3325
Dec. 7	- 0.13	8.93	20.78	255.4788	115.9475	175.6380	187.4466
17	- 0.11	8.94	20.80	265.3353	247.7115	175.1084	188.5606
27	- 0.09	8.95	20.82	275.1917	19.4754	174.5789	189.6746
37	- 0.07	8.95	20.82	285.0482	151.2394	174.0493	190.7887

Daily Motion.			
Mean Obliquity, 1922.0 - - - 23° 26' 57".95	+	+	+
Precession for the Year 1922 - - - 50".2614	0.98565	13".17640	0.05295
Precession for 1 Day - - - 0".1376			0".11140

## AT APPARENT NOON.

Date.	THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var. in hour.
	Apparent Right Ascension.	Var. in hour.	Apparent Declination.	Var. in hour.			
	h m s	s	° ' "	"	m s	m s	s
Sun.	1 18 44 53.68	11.050	S. 23 2 43.4	11.85	1 11.04	3 28.11	1.190
Mon.	2 18 49 18.73	11.036	22 57 45.3	12.99	1 10.99	3 56.52	1.176
Tues.	3 18 53 43.42	11.021	22 52 19.8	14.13	1 10.95	4 24.58	1.161
Wed.	4 18 58 7.73	11.004	22 46 27.0	15.26	1 10.90	4 52.25	1.144
Thur.	5 19 2 31.62	10.986	22 40 7.1	16.39	1 10.84	5 19.51	1.126
Fri.	6 19 6 55.06	10.967	22 33 20.2	17.51	1 10.78	5 46.32	1.107
Sat.	7 19 11 18.02	10.946	22 26 6.6	18.62	1 10.72	6 12.66	1.087
Sun.	8 19 15 40.48	10.925	22 18 26.6	19.72	1 10.65	6 38.49	1.065
Mon.	9 19 20 2.41	10.902	22 10 20.2	20.81	1 10.58	7 3.80	1.043
Tues.	10 19 24 23.78	10.879	22 1 47.8	21.89	1 10.50	7 28.55	1.019
Wed.	11 19 28 44.58	10.854	21 52 49.6	22.96	1 10.43	7 52.72	0.995
Thur.	12 19 33 4.78	10.829	21 43 25.9	24.02	1 10.35	8 16.30	0.970
Fri.	13 19 37 24.37	10.803	21 33 36.8	25.07	1 10.26	8 39.27	0.944
Sat.	14 19 41 43.33	10.777	21 23 22.7	26.10	1 10.18	9 1.61	0.918
Sun.	15 19 46 1.65	10.750	21 12 43.9	27.13	1 10.09	9 23.31	0.891
Mon.	16 19 50 19.31	10.722	21 1 40.7	28.14	1 9.99	9 44.36	0.863
Tues.	17 19 54 36.29	10.693	20 50 13.3	29.14	1 9.90	10 4.73	0.835
Wed.	18 19 58 52.59	10.665	20 38 22.1	30.13	1 9.80	10 24.42	0.806
Thur.	19 20 3 8.19	10.635	20 26 7.3	31.10	1 9.70	10 43.41	0.777
Fri.	20 20 7 23.08	10.605	20 13 29.4	32.06	1 9.60	11 1.70	0.747
Sat.	21 20 11 37.25	10.575	20 0 28.6	33.00	1 9.49	11 19.26	0.716
Sun.	22 20 15 50.67	10.544	19 47 5.4	33.93	1 9.39	11 36.08	0.685
Mon.	23 20 20 3.34	10.512	19 33 20.1	34.84	1 9.28	11 52.15	0.654
Tues.	24 20 24 15.24	10.480	19 19 13.0	35.74	1 9.17	12 7.45	0.621
Wed.	25 20 28 26.36	10.447	19 4 44.5	36.62	1 9.06	12 21.97	0.589
Thur.	26 20 32 36.69	10.414	18 49 55.1	37.49	1 8.95	12 35.71	0.556
Fri.	27 20 36 46.23	10.380	18 34 45.1	38.34	1 8.84	12 48.66	0.522
Sat.	28 20 40 54.95	10.346	18 19 14.9	39.17	1 8.73	13 0.79	0.488
Sun.	29 20 45 2.85	10.312	18 3 25.0	39.99	1 8.61	13 12.11	0.454
Mon.	30 20 49 9.93	10.278	17 47 15.6	40.79	1 8.50	13 22.60	0.420
Tues.	31 20 53 16.18	10.243	17 30 47.2	41.57	1 8.38	13 32.27	0.386
Wed.	32 20 57 21.60	10.208	S. 17 14 0.3	42.33	1 8.27	13 41.11	0.351

\* Mean time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.



## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be added to Apparent Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
		h m s	S. ° ' "	′ " "	m s	h m s
Sun.	1	18 44 53.04	S. 23 2 44.1	16 17.49	3 28.04	18 41 25.00
Mon.	2	18 49 18.00	22 57 46.2	16 17.50	3 56.45	18 45 21.56
Tues.	3	18 53 42.61	22 52 20.8	16 17.50	4 24.50	18 49 18.12
Wed.	4	18 58 6.83	22 46 28.2	16 17.50	4 52.16	18 53 14.67
Thur.	5	19 2 30.64	22 40 8.5	16 17.50	5 19.41	18 57 11.23
Fri.	6	19 6 54.00	22 33 21.9	16 17.49	5 46.22	19 1 7.78
Sat.	7	19 11 16.89	22 26 8.6	16 17.47	6 12.55	19 5 4.34
Sun.	8	19 15 39.27	22 18 28.7	16 17.45	6 38.37	19 9 0.90
Mon.	9	19 20 1.13	22 10 22.7	16 17.42	7 3.67	19 12 57.46
Tues.	10	19 24 22.43	22 1 50.5	16 17.39	7 28.42	19 16 54.01
Wed.	11	19 28 43.16	21 52 52.6	16 17.35	7 52.59	19 20 50.57
Thur.	12	19 33 3.29	21 43 29.1	16 17.31	8 16.17	19 24 47.12
Fri.	13	19 37 22.82	21 33 40.4	16 17.25	8 39.14	19 28 43.68
Sat.	14	19 41 41.71	21 23 26.7	16 17.20	9 1.48	19 32 40.24
Sun.	15	19 45 59.97	21 12 48.2	16 17.13	9 23.17	19 36 36.80
Mon.	16	19 50 17.57	21 1 45.3	16 17.06	9 44.21	19 40 33.35
Tues.	17	19 54 34.50	20 50 18.2	16 16.98	10 4.59	19 44 29.91
Wed.	18	19 58 50.75	20 38 27.3	16 16.90	10 24.28	19 48 26.46
Thur.	19	20 3 6.30	20 26.12.9	16 16.81	10 43.28	19 52 23.02
Fri.	20	20 7 21.13	20 13 35.3	16 16.72	11 1.56	19 56 19.58
Sat.	21	20 11 35.25	20 0 34.8	16 16.62	11 19.12	20 0 16.13
Sun.	22	20 15 48.63	19 47 11.9	16 16.52	11 35.94	20 4 12.69
Mon.	23	20 20 1.26	19 33 26.9	16 16.41	11 52.02	20 8 9.24
Tues.	24	20 24 13.12	19 19 20.2	16 16.30	12 7.32	20 12 5.80
Wed.	25	20 28 24.21	19 4 52.1	16 16.19	12 21.85	20 16 2.36
Thur.	26	20 32 34.51	18 50 3.0	16 16.07	12 35.60	20 19 58.91
Fri.	27	20 36 44.01	18 34 53.3	16 15.95	12 48.54	20 23 55.47
Sat.	28	20 40 52.70	18 19 23.4	16 15.83	13 0.68	20 27 52.02
Sun.	29	20 45 0.58	18 3 33.7	16 15.70	13 12.01	20 31 48.58
Mon.	30	20 49 7.64	17 47 24.7	16 15.57	13 22.51	20 35 45.13
Tues.	31	20 53 13.87	17 30 56.6	16 15.43	13 32.19	20 39 41.69
Wed.	32	20 57 19.27	S. 17 14 9.9	16 15.30	13 41.03	20 43 38.24

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	280° 18' 54.9	N. 0° 62	9.9926913	5 17 42.81	14 47.90	14 46.60	54 13.05	54 8.27
2	281 20 5.4	0.54	.9926880	5 13 46.90	14 45.80	14 45.55	54 5.35	54 4.45
3	282 21 15.7	0.44	.9926867	5 9 50.98	14 45.90	14 46.89	54 5.73	54 9.33
4	283 22 25.7	0.33	9.9926873	5 5 55.07	14 48.53	14 50.85	54 15.33	54 23.85
5	284 23 35.4	0.22	.9926899	5 1 59.16	14 53.86	14 57.59	54 34.89	54 48.52
6	285 24 44.7	N. 0.09	.9926947	4 58 3.25	15 1.99	15 7.06	55 4.65	55 23.23
7	286 25 53.6	S. 0.03	9.9927017	4 54 7.34	15 12.76	15 19.03	55 44.12	56 7.11
8	287 27 2.0	0.16	.9927111	4 50 11.43	15 25.82	15 33.00	56 31.96	56 58.29
9	288 28 10.0	0.26	.9927230	4 46 15.52	15 40.50	15 48.15	57 25.74	57 53.79
10	289 29 17.4	0.34	9.9927375	4 42 19.61	15 55.81	16 3.33	58 21.88	58 49.43
11	290 30 24.3	0.39	.9927547	4 38 23.70	16 10.52	16 17.19	59 15.76	59 40.20
12	291 31 30.8	0.42	.9927747	4 34 27.79	16 23.16	16 28.28	60 2.08	60 20.84
13	292 32 36.8	0.43	9.9927976	4 30 31.88	16 32.39	16 35.39	60 35.90	60 46.88
14	293 33 42.3	0.39	.9928234	4 26 35.97	16 37.20	16 37.78	60 53.50	60 55.65
15	294 34 47.5	0.31	.9928521	4 22 40.06	16 37.16	16 35.39	60 53.38	60 46.90
16	295 35 52.4	0.21	9.9928835	4 18 44.15	16 32.58	16 28.83	60 36.58	60 22.85
17	296 36 56.9	S. 0.10	.9929177	4 14 48.24	16 24.29	16 19.13	60 6.24	59 47.33
18	297 38 1.1	N. 0.02	.9929545	4 10 52.32	16 13.51	16 7.55	59 26.69	59 4.87
19	298 39 5.1	0.15	9.9929937	4 6 56.41	16 1.41	15 55.21	58 42.38	58 19.66
20	299 40 8.7	0.29	.9930351	4 3 0.50	15 49.07	15 43.05	57 57.15	57 35.09
21	300 41 12.0	0.40	.9930786	3 59 4.59	15 37.23	15 31.67	57 13.79	56 53.39
22	301 42 14.8	0.50	9.9931241	3 55 8.68	15 26.39	15 21.41	56 34.05	56 15.82
23	302 43 17.2	0.58	.9931715	3 51 12.77	15 16.75	15 12.42	55 58.74	55 42.86
24	303 44 19.0	0.63	.9932205	3 47 16.86	15 8.40	15 4.68	55 28.13	55 14.52
25	304 45 20.2	0.66	9.9932712	3 43 20.96	15 1.27	14 58.16	55 2.03	54 50.61
26	305 46 20.6	0.66	.9933234	3 39 25.05	14 55.33	14 52.79	54 40.26	54 30.95
27	306 47 20.3	0.62	.9933771	3 35 29.14	14 50.54	14 48.57	54 22.70	54 15.51
28	307 48 19.0	0.57	9.9934323	3 31 33.23	14 46.92	14 45.59	54 9.46	54 4.57
29	308 49 16.8	0.49	.9934890	3 27 37.32	14 44.60	14 43.98	54 0.94	53 58.67
30	309 50 13.6	0.39	.9935471	3 23 41.41	14 43.75	14 43.95	53 57.82	53 58.56
31	310 51 9.2	0.28	.9936068	3 19 45.50	14 44.61	14 45.78	54 1.00	54 5.26
32	311 52 3.6	N. 0.16	9.9936679	3 15 49.59	14 47.47	14 49.72	54 11.45	54 19.71

## MEAN TIME.

Day.	THE MOON'S						
	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	316° 46' 31" 2	322° 43' 29" 7	N. 4° 11' 24" 5	N. 3° 52' 57" 1	3·26	h m 2 35·0	h m 14 57·0
2	328 38 56·8	334 33 17·6	3 32 1·2	3 8 50·4	4·26	3 18·6	15 40·1
3	340 27 1·4	346 20 40·1	2 43 38·5	2 16 40·0	5·26	4 1·3	16 22·4
4	352 14 48·6	358 10 4·5	1 48 9·4	1 18 21·9	6·26	4 43·5	17 4·7
5	4 7 7·4	10 6 38·5	N. 0 47 33·1	N. 0 15 59·2	7·26	5 26·1	17 47·8
6	16 9 19·8	22 15 53·7	S. 0 16 2·5	S. 0 48 13·5	8·26	6 9·9	18 32·5
7	28 27 1·7	34 43 23·7	1 20 14·1	1 51 42·7	9·26	6 55·6	19 19·5
8	41 5 36·5	47 34 12·8	2 22 16·1	2 51 29·1	10·26	7 44·1	20 9·5
9	54 9 39·8	60 52 16·7	3 18 54·7	3 44 4·5	11·26	8 35·9	21 3·0
10	67 42 14·1	74 39 31·7	4 6 28·8	4 25 37·9	12·26	9 31·0	21 59·7
11	81 43 57·7	88 55 7·2	4 41 2·7	4 52 16·2	13·26	10 29·1	22 58·8
12	96 12 22·9	103 34 54·9	4 58 55·2	5 0 41·4	14·26	11 28·9	23 59·0
13	111 1 42·4	118 31 36·4	4 57 23·3	4 48 57·0	15·26	12 29·0	* *
14	126 3 22·2	133 35 43·1	4 35 27·2	4 17 7·3	16·26	13 28·0	0 58·7
15	141 7 23·6	148 37 13·5	3 54 19·0	3 27 31·1	17·26	14 25·1	1 56·8
16	156 4 10·2	163 27 20·7	2 57 18·0	2 24 18·3	18·26	15 20·0	2 52·8
17	170 46 3·1	177 59 47·0	1 49 12·6	S. 1 12 42·3	19·26	16 13·2	3 46·8
18	185 8 12·9	192 11 11·5	S. 0 35 27·7	N. 0 1 53·2	20·26	17 5·0	4 39·2
19	199 8 41·9	206 0 50·6	N. 0 38 44·5	1 14 34·2	21·26	17 56·1	5 30·6
20	212 47 49·5	219 29 54·3	1 48 53·4	2 21 16·7	22·26	18 47·0	6 21·6
21	226 7 23·5	232 40 36·1	2 51 22·1	3 18 50·8	23·26	19 38·0	7 12·5
22	239 9 52·2	245 35 30·6	3 43 27·1	4 4 57·7	24·26	20 28·9	8 3·5
23	251 57 49·2	258 17 3·8	4 23 12·3	4 38 3·0	25·26	21 19·6	8 54·3
24	264 33 28·8	270 47 16·5	4 49 24·1	4 57 12·3	26·26	22 9·6	9 44·7
25	276 58 37·2	283 7 39·6	5 1 26·6	5 2 8·0	27·26	22 58·4	10 34·2
26	289 14 31·7	295 19 20·3	4 59 19·8	4 53 7·3	28·26	23 45·7	11 22·3
27	301 22 12·1	307 23 14·1	4 43 37·3	4 30 59·0	29·26	* *	12 8·8
28	313 22 33·9	319 20 20·7	4 15 22·8	3 57 0·4	0·51	0 31·5	12 53·8
29	325 16 45·4	331 12 0·7	3 36 5·3	3 12 51·2	1·51	1 15·7	13 37·4
30	337 6 22·0	343 0 7·5	2 47 33·4	2 20 27·4	2·51	1 58·8	14 20·0
31	348 53 37·8	354 47 16·8	1 51 49·3	1 21 55·7	3·51	2 41·1	15 2·2
32	0 41 31·2	6 36 50·6	N. 0 51 3·7	N. 0 19 30·5	4·51	3 23·4	15 44·6

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination	Var. in rom.
<b>SUNDAY 1.</b>					<b>TUESDAY 3.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 11 45.82	19.637	S. 11 48 51.9	74.46	0	22 43 40.83	18.800	S. 5 7 32.3	90.63
1	21 13 43.55	19.612	11 41 23.8	74.92	1	22 45 33.61	18.792	4 58 27.9	90.83
2	21 15 41.15	19.587	11 33 52.8	75.39	2	22 47 26.34	18.784	4 49 22.3	91.03
3	21 17 38.59	19.562	11 26 19.1	75.84	3	22 49 19.02	18.778	4 40 15.5	91.23
4	21 19 35.89	19.538	11 18 42.7	76.30	4	22 51 11.67	18.772	4 31 7.5	91.42
5	21 21 33.05	19.514	11 11 3.5	76.75	5	22 53 4.28	18.765	4 21 58.5	91.59
6	21 23 30.06	19.490	11 3 21.7	77.18	6	22 54 56.85	18.759	4 12 48.4	91.78
7	21 25 26.93	19.467	10 55 37.3	77.63	7	22 56 49.39	18.755	4 3 37.2	91.96
8	21 27 23.66	19.443	10 47 50.2	78.06	8	22 58 41.91	18.750	3 54 24.9	92.13
9	21 29 20.25	19.420	10 40 0.6	78.48	9	23 0 34.39	18.745	3 45 11.7	92.28
10	21 31 16.70	19.398	10 32 8.5	78.89	10	23 2 26.85	18.742	3 35 57.5	92.45
11	21 33 13.02	19.376	10 24 13.9	79.31	11	23 4 19.29	18.739	3 26 42.3	92.61
12	21 35 9.21	19.354	10 16 16.8	79.72	12	23 6 11.72	18.736	3 17 26.2	92.75
13	21 37 5.27	19.332	10 8 17.3	80.11	13	23 8 4.12	18.733	3 8 9.3	92.89
14	21 39 1.19	19.310	10 0 15.5	80.50	14	23 9 56.52	18.732	2 58 51.5	93.03
15	21 40 56.99	19.290	9 52 11.3	80.90	15	23 11 48.90	18.730	2 49 33.0	93.16
16	21 42 52.67	19.269	9 44 4.7	81.28	16	23 13 41.28	18.729	2 40 13.6	93.29
17	21 44 48.22	19.248	9 35 55.9	81.66	17	23 15 33.65	18.728	2 30 53.5	93.41
18	21 46 43.65	19.228	9 27 44.8	82.03	18	23 17 26.02	18.729	2 21 32.7	93.53
19	21 48 38.96	19.208	9 19 31.6	82.39	19	23 19 18.40	18.729	2 12 11.2	93.64
20	21 50 34.15	19.188	9 11 16.1	82.76	20	23 21 10.77	18.730	2 2 49.0	93.74
21	21 52 29.22	19.169	9 2 58.5	83.11	21	23 23 3.16	18.733	1 53 26.3	93.84
22	21 54 24.18	19.151	8 54 38.8	83.46	22	23 24 55.56	18.734	1 44 2.9	93.95
23	21 56 19.03	19.133	S. 8 46 17.0	83.81	23	23 26 47.97	18.737	S. 1 34 38.9	94.04
<b>MONDAY 2.</b>					<b>WEDNESDAY 4.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 58 13.78	19.116	S. 8 37 53.1	84.14	0	23 28 40.40	18.739	S. 1 25 14.4	94.13
1	22 0 8.42	19.098	8 29 27.3	84.48	1	23 30 32.84	18.743	1 15 49.4	94.20
2	22 2 2.95	19.080	8 20 59.4	84.80	2	23 32 25.31	18.748	1 6 24.0	94.28
3	22 3 57.38	19.063	8 12 29.7	85.12	3	23 34 17.81	18.752	0 56 58.1	94.36
4	22 5 51.71	19.047	8 3 58.0	85.44	4	23 36 10.33	18.757	0 47 31.7	94.43
5	22 7 45.94	19.030	7 55 24.4	85.75	5	23 38 2.89	18.763	0 38 5.0	94.48
6	22 9 40.07	19.014	7 46 49.0	86.06	6	23 39 55.48	18.768	0 28 38.0	94.53
7	22 11 34.11	18.999	7 38 11.7	86.36	7	23 41 48.10	18.774	0 19 10.6	94.59
8	22 13 28.06	18.984	7 29 32.7	86.65	8	23 43 40.77	18.782	0 9 42.9	94.64
9	22 15 21.92	18.969	7 20 51.9	86.93	9	23 45 33.49	18.790	S. 0 0 14.9	94.68
10	22 17 15.69	18.955	7 12 9.5	87.22	10	23 47 26.25	18.798	N. 0 9 13.2	94.71
11	22 19 9.38	18.942	7 3 25.3	87.50	11	23 49 19.06	18.806	0 18 41.6	94.74
12	22 21 2.99	18.928	6 54 39.5	87.78	12	23 51 11.92	18.815	0 28 10.1	94.77
13	22 22 56.52	18.915	6 45 52.0	88.04	13	23 53 4.84	18.825	0 37 38.8	94.78
14	22 24 49.97	18.903	6 37 3.0	88.30	14	23 54 57.82	18.835	0 47 7.5	94.80
15	22 26 43.35	18.891	6 28 12.4	88.56	15	23 56 50.86	18.845	0 56 36.4	94.82
16	22 28 36.66	18.878	6 19 20.3	88.81	16	23 58 43.96	18.857	1 6 5.3	94.82
17	22 30 29.89	18.867	6 10 26.7	89.07	17	0 0 37.14	18.868	1 15 34.2	94.81
18	22 32 23.06	18.857	6 1 31.6	89.30	18	0 2 30.38	18.880	1 25 3.0	94.80
19	22 34 16.17	18.846	5 52 35.1	89.53	19	0 4 23.70	18.893	1 34 31.8	94.80
20	22 36 9.21	18.836	5 43 37.2	89.71	20	0 6 17.10	18.907	1 44 0.6	94.78
21	22 38 2.20	18.827	5 34 38.0	89.98	21	0 8 10.58	18.921	1 53 29.2	94.75
22	22 39 55.13	18.818	5 25 37.4	90.21	22	0 10 4.15	18.935	2 2 57.6	94.73
23	22 41 48.01	18.808	5 16 35.5	90.43	23	0 11 57.80	18.949	2 12 25.9	94.70
24	22 43 40.83	18.800	S. 5 7 32.3	90.63	24	0 13 51.54	18.965	N. 2 21 54.0	94.66

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10m.	Declination.	Var. in 10m.	Hour.	Right Ascension.	Var. in 10m.	Declination.	Var. in 10m.
<b>THURSDAY 5.</b>					<b>SATURDAY 7.</b>				
	h m s	s	N.			h m s	s	N.	
0	0 13 51.54	18.965	N. 2 21 54.0	94.66	0	1 47 39.64	20.318	N. 9 40 37.6	85.69
1	0 15 45.38	18.981	2 31 21.8	94.61	1	1 49 41.67	20.358	9 49 10.7	85.33
2	0 17 39.31	18.997	2 40 49.3	94.56	2	1 51 43.94	20.399	9 57 41.6	84.98
3	0 19 33.34	19.014	2 50 16.5	94.51	3	1 53 46.46	20.441	10 6 10.4	84.61
4	0 21 27.48	19.032	2 59 43.4	94.44	4	1 55 49.23	20.483	10 14 36.9	84.23
5	0 23 21.72	19.050	3 9 9.8	94.38	5	1 57 52.25	20.524	10 23 1.2	83.85
6	0 25 16.08	19.068	3 18 35.9	94.31	6	1 59 55.52	20.567	10 31 23.1	83.45
7	0 27 10.54	19.087	3 28 1.5	94.23	7	2 1 59.05	20.611	10 39 42.6	83.05
8	0 29 5.12	19.108	3 37 26.6	94.14	8	2 4 2.85	20.654	10 47 59.7	82.65
9	0 30 59.83	19.128	3 46 51.2	94.06	9	2 6 6.90	20.698	10 56 14.4	82.23
10	0 32 54.65	19.148	3 56 15.3	93.97	10	2 8 11.22	20.743	11 4 26.5	81.80
11	0 34 49.60	19.168	4 5 38.8	93.86	11	2 10 15.81	20.788	11 12 36.0	81.37
12	0 36 44.67	19.190	4 15 1.6	93.75	12	2 12 20.67	20.833	11 20 42.9	80.93
13	0 38 39.88	19.213	4 24 23.8	93.65	13	2 14 25.80	20.878	11 28 47.1	80.48
14	0 40 35.23	19.236	4 33 45.4	93.53	14	2 16 31.20	20.924	11 36 48.6	80.02
15	0 42 30.71	19.258	4 43 6.2	93.40	15	2 18 36.89	20.971	11 44 47.3	79.54
16	0 44 26.33	19.283	4 52 26.2	93.27	16	2 20 42.85	21.018	11 52 43.1	79.07
17	0 46 22.10	19.308	5 1 45.4	93.13	17	2 22 49.10	21.065	12 0 36.1	78.59
18	0 48 18.02	19.333	5 11 3.8	92.99	18	2 24 55.63	21.112	12 8 26.2	78.09
19	0 50 14.09	19.358	5 20 21.3	92.84	19	2 27 2.44	21.159	12 16 13.2	77.59
20	0 52 10.31	19.383	5 29 37.9	92.69	20	2 29 9.54	21.208	12 23 57.3	77.08
21	0 54 6.68	19.409	5 38 53.6	92.53	21	2 31 16.94	21.257	12 31 38.2	76.56
22	0 56 3.22	19.437	5 48 8.3	92.37	22	2 33 24.62	21.305	12 39 16.0	76.03
23	0 57 59.92	19.464	N. 5 57 22.0	92.19	23	2 35 32.60	21.355	N. 12 46 50.5	75.49
<b>FRIDAY 6.</b>					<b>SUNDAY 8.</b>				
	h m s	s	N.			h m s	s	N.	
0	0 59 56.79	19.492	N. 6 6 34.6	92.01	0	2 37 40.88	21.404	N. 12 54 21.9	74.95
1	1 1 53.82	19.520	6 15 46.1	91.83	1	2 39 49.45	21.454	13 1 49.9	74.38
2	1 3 51.03	19.550	6 24 56.5	91.64	2	2 41 58.33	21.504	13 9 14.5	73.82
3	1 5 48.42	19.580	6 34 5.8	91.44	3	2 44 7.50	21.554	13 16 35.7	73.25
4	1 7 45.99	19.610	6 43 13.8	91.23	4	2 46 16.98	21.605	13 23 53.5	72.67
5	1 9 43.74	19.640	6 52 20.5	91.02	5	2 48 26.76	21.656	13 31 7.7	72.07
6	1 11 41.67	19.671	7 1 26.0	90.81	6	2 50 36.85	21.708	13 38 18.3	71.47
7	1 13 39.79	19.703	7 10 30.2	90.58	7	2 52 47.25	21.759	13 45 25.3	70.86
8	1 15 38.10	19.735	7 19 33.0	90.34	8	2 54 57.96	21.811	13 52 28.6	70.23
9	1 17 36.61	19.768	7 28 34.3	90.10	9	2 57 8.98	21.863	13 59 28.1	69.60
10	1 19 35.32	19.802	7 37 34.2	89.87	10	2 59 20.31	21.914	14 6 23.8	68.97
11	1 21 34.23	19.835	7 46 32.7	89.62	11	3 1 31.95	21.967	14 13 15.7	68.32
12	1 23 33.34	19.869	7 55 29.6	89.35	12	3 3 43.91	22.020	14 20 3.6	67.65
13	1 25 32.66	19.904	8 4 24.9	89.08	13	3 5 56.19	22.073	14 26 47.5	66.98
14	1 27 32.19	19.939	8 13 18.6	88.82	14	3 8 8.78	22.126	14 33 27.3	66.30
15	1 29 31.93	19.974	8 22 10.7	88.54	15	3 10 21.70	22.179	14 40 3.1	65.62
16	1 31 31.88	20.011	8 31 1.1	88.25	16	3 12 34.93	22.232	14 46 34.7	64.91
17	1 33 32.06	20.048	8 39 49.7	87.95	17	3 14 48.48	22.285	14 53 2.0	64.20
18	1 35 32.45	20.084	8 48 36.5	87.65	18	3 17 2.35	22.338	14 59 25.1	63.49
19	1 37 33.07	20.122	8 57 21.5	87.35	19	3 19 16.54	22.393	15 5 43.9	62.76
20	1 39 33.92	20.161	9 6 4.7	87.03	20	3 21 31.06	22.446	15 11 58.2	62.02
21	1 41 35.00	20.199	9 14 45.9	86.70	21	3 23 45.89	22.499	15 18 8.1	61.27
22	1 43 36.31	20.238	9 23 25.1	86.38	22	3 26 1.05	22.554	15 24 13.4	60.51
23	1 45 37.86	20.278	9 32 2.4	86.04	23	3 28 16.54	22.608	15 30 14.2	59.74
24	1 47 39.64	20.318	N. 9 40 37.6	85.69	24	3 30 32.34	22.661	N. 15 36 10.3	58.96

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 9.</b>					<b>WEDNESDAY 11.</b>				
	h m s	s	N. 15° 36' 10"	58"		h m s	s	N. 18° 30' 48"	10"
0	3 30 32.34	22.661	15 36 10.3	58.96	0	5 25 13.78	24.987	18 30 48.7	10.31
1	3 32 48.47	22.716	15 42 1.7	58.18	1	5 27 43.81	25.023	18 31 46.9	9.08
2	3 35 4.93	22.770	15 47 48.4	57.38	2	5 30 14.05	25.058	18 32 37.7	7.86
3	3 37 21.71	22.823	15 53 30.2	56.56	3	5 32 44.50	25.093	18 33 21.2	6.64
4	3 39 38.81	22.877	15 59 7.1	55.74	4	5 35 15.16	25.127	18 33 57.4	5.41
5	3 41 56.23	22.931	16 4 39.1	54.92	5	5 37 46.02	25.159	18 34 26.1	4.16
6	3 44 13.98	22.985	16 10 6.1	54.08	6	5 40 17.07	25.192	18 34 47.3	2.92
7	3 46 32.05	23.039	16 15 28.1	53.23	7	5 42 48.32	25.223	18 35 1.1	1.68
8	3 48 50.45	23.093	16 20 44.9	52.37	8	5 45 19.75	25.253	18 35 7.4	0.42
9	3 51 9.17	23.147	16 25 56.5	51.50	9	5 47 51.36	25.283	18 35 6.1	0.84
10	3 53 28.21	23.200	16 31 2.9	50.62	10	5 50 23.14	25.311	18 34 57.3	2.11
11	3 55 47.57	23.253	16 36 3.9	49.73	11	5 52 55.09	25.339	18 34 40.8	3.37
12	3 58 7.25	23.307	16 40 59.6	48.83	12	5 55 27.21	25.367	18 34 16.8	4.63
13	4 0 27.25	23.359	16 45 49.9	47.92	13	5 57 59.49	25.393	18 33 45.2	5.92
14	4 2 47.56	23.413	16 50 34.7	47.00	14	6 0 31.92	25.418	18 33 5.8	7.20
15	4 5 8.20	23.466	16 55 13.9	46.07	15	6 3 4.50	25.443	18 32 18.8	8.47
16	4 7 29.15	23.518	16 59 47.6	45.13	16	6 5 37.23	25.466	18 31 24.2	9.75
17	4 9 50.41	23.570	17 4 15.5	44.18	17	6 8 10.09	25.488	18 30 21.8	11.04
18	4 12 11.99	23.623	17 8 37.8	43.23	18	6 10 43.08	25.509	18 29 11.7	12.33
19	4 14 33.88	23.674	17 12 54.2	42.25	19	6 13 16.20	25.530	18 27 53.8	13.63
20	4 16 56.08	23.726	17 17 4.8	41.28	20	6 15 49.44	25.549	18 26 28.2	14.91
21	4 19 18.59	23.778	17 21 9.6	40.29	21	6 18 22.79	25.568	18 24 54.9	16.20
22	4 21 41.41	23.828	17 25 8.3	39.29	22	6 20 56.25	25.586	18 23 13.8	17.50
23	4 24 4.53	23.878	N. 17 29 1.1	38.29	23	6 23 29.82	25.603	N. 18 21 24.9	18.80
<b>TUESDAY 10.</b>					<b>THURSDAY 12.</b>				
	h m s	s	N. 17° 32' 47"	37"		h m s	s	N. 18° 19' 28"	20"
0	4 26 27.95	23.928	17 32 47.8	37.27	0	6 26 3.48	25.618	18 19 28.2	20.10
1	4 28 51.67	23.978	17 36 28.3	36.24	1	6 28 37.23	25.633	18 17 23.7	21.39
2	4 31 15.69	24.028	17 40 2.7	35.21	2	6 31 11.07	25.647	18 15 11.5	22.68
3	4 33 40.01	24.078	17 43 30.8	34.16	3	6 33 44.99	25.660	18 12 51.5	23.98
4	4 36 4.62	24.126	17 46 52.6	33.11	4	6 36 18.99	25.672	18 10 23.7	25.28
5	4 38 29.52	24.174	17 50 8.1	32.05	5	6 38 53.05	25.683	18 7 48.1	26.58
6	4 40 54.71	24.222	17 53 17.2	30.98	6	6 41 27.18	25.693	18 5 4.7	27.88
7	4 43 20.18	24.269	17 56 19.8	29.89	7	6 44 1.36	25.701	18 2 13.5	29.18
8	4 45 45.94	24.317	17 59 15.9	28.81	8	6 46 35.59	25.709	17 59 14.6	30.46
9	4 48 11.98	24.363	18 2 5.5	27.71	9	6 49 9.87	25.717	17 56 8.0	31.75
10	4 50 38.29	24.408	18 4 48.4	26.60	10	6 51 44.19	25.723	17 52 53.6	33.04
11	4 53 4.88	24.454	18 7 24.7	25.49	11	6 54 18.54	25.728	17 49 31.5	34.33
12	4 55 31.74	24.498	18 9 54.3	24.37	12	6 56 52.92	25.732	17 46 1.6	35.62
13	4 57 58.86	24.543	18 12 17.1	23.23	13	6 59 27.32	25.734	17 42 24.1	36.90
14	5 0 26.25	24.587	18 14 33.1	22.10	14	7 2 1.73	25.737	17 38 38.8	38.18
15	5 2 53.90	24.629	18 16 42.3	20.95	15	7 4 36.16	25.738	17 34 45.9	39.45
16	5 5 21.80	24.672	18 18 44.5	19.79	16	7 7 10.59	25.738	17 30 45.4	40.73
17	5 7 49.96	24.713	18 20 39.8	18.63	17	7 9 45.02	25.738	17 26 37.2	41.99
18	5 10 18.36	24.754	18 22 28.1	17.47	18	7 12 19.44	25.736	17 22 21.5	43.25
19	5 12 47.01	24.795	18 24 9.4	16.29	19	7 14 53.85	25.733	17 17 58.2	44.52
20	5 15 15.90	24.835	18 25 43.6	15.10	20	7 17 28.24	25.730	17 13 27.3	45.77
21	5 17 45.03	24.873	18 27 10.6	13.91	21	7 20 2.61	25.726	17 8 49.0	47.02
22	5 20 14.38	24.912	18 28 30.5	12.72	22	7 22 36.95	25.721	17 4 3.1	48.26
23	5 22 43.97	24.950	18 29 43.2	11.52	23	7 25 11.26	25.714	16 59 9.9	49.49
24	5 25 13.78	24.987	N. 18 30 48.7	10.31	24	7 27 45.52	25.707	N. 16 54 9.2	50.73

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>FRIDAY 13.</b>					<b>SUNDAY 15.</b>				
	h m s	s	N. 16° 54' 9".	50.73		h m s	s	N. 10° 45' 31".	98.53
0	7 27 45.52	25.707	16 49 1.1	51.96	0	9 28 57.70	24.588	10 35 38.6	99.22
1	7 30 19.74	25.699	16 43 45.7	53.18	1	9 31 25.13	24.554	10 25 41.3	99.88
2	7 32 53.91	25.691	16 38 22.9	54.39	2	9 33 52.35	24.521	10 15 40.0	100.55
3	7 35 28.03	25.682	16 32 53.0	55.59	3	9 36 19.38	24.488	10 5 34.7	101.20
4	7 38 2.09	25.670	16 27 15.8	56.80	4	9 38 46.20	24.454	9 55 25.6	101.83
5	7 40 36.07	25.658	16 21 31.4	57.98	5	9 41 12.83	24.421	9 45 12.8	102.43
6	7 43 9.99	25.647	16 15 40.0	59.17	6	9 43 39.25	24.387	9 34 56.4	103.04
7	7 45 43.84	25.634	16 9 41.4	60.35	7	9 46 5.47	24.353	9 24 36.3	103.63
8	7 48 17.60	25.620	16 3 35.8	61.52	8	9 48 31.49	24.319	9 14 12.8	104.20
9	7 50 51.28	25.606	15 57 23.2	62.68	9	9 50 57.30	24.285	9 3 45.9	104.76
10	7 53 24.87	25.590	15 51 3.7	63.82	10	9 53 22.91	24.252	8 53 15.7	105.30
11	7 55 58.36	25.574	15 44 37.4	64.96	11	9 55 48.32	24.218	8 42 42.3	105.83
12	7 58 31.76	25.557	15 38 4.2	66.10	12	9 58 13.53	24.184	8 32 5.7	106.35
13	8 1 5.05	25.539	15 31 24.2	67.22	13	10 0 38.53	24.151	8 21 26.1	106.84
14	8 3 38.23	25.521	15 24 37.5	68.33	14	10 3 3.34	24.118	8 10 43.6	107.33
15	8 6 11.30	25.503	15 17 44.2	69.43	15	10 5 27.94	24.083	7 59 58.2	107.80
16	8 8 44.26	25.483	15 10 44.3	70.53	16	10 7 52.34	24.050	7 49 10.0	108.26
17	8 11 17.10	25.463	15 3 37.8	71.62	17	10 10 16.54	24.016	7 38 19.1	108.70
18	8 13 49.81	25.442	14 56 24.9	72.68	18	10 12 40.53	23.983	7 27 25.6	109.12
19	8 16 22.40	25.420	14 49 5.6	73.75	19	10 15 4.33	23.950	7 16 29.7	109.53
20	8 18 54.85	25.397	14 41 39.9	74.80	20	10 17 27.93	23.917	7 5 31.3	109.93
21	8 21 27.16	25.374	14 34 8.0	75.84	21	10 19 51.33	23.883	6 54 30.5	110.32
22	8 23 59.34	25.352	14 26 29.8	76.87	22	10 22 14.53	23.850	6 43 27.5	110.68
23	8 26 31.38	25.328			23	10 24 37.53	23.818		
<b>SATURDAY 14.</b>					<b>MONDAY 16.</b>				
	h m s	s	N. 14° 18' 45.5"	77.89		h m s	s	N. 6° 32' 22.4"	111.03
0	8 29 3.27	25.303	14 10 55.1	78.90	0	10 27 0.34	23.785	6 21 15.1	111.37
1	8 31 35.01	25.278	14 2 58.7	79.89	1	10 29 22.95	23.753	6 10 5.9	111.69
2	8 34 6.60	25.252	13 54 56.4	80.88	2	10 31 45.37	23.721	5 58 54.8	112.00
3	8 36 38.03	25.225	13 46 48.2	81.85	3	10 34 7.60	23.689	5 47 41.9	112.30
4	8 39 9.30	25.198	13 38 34.2	82.80	4	10 36 29.64	23.657	5 36 27.2	112.58
5	8 41 40.41	25.172	13 30 14.6	83.74	5	10 38 51.48	23.625	5 25 10.9	112.85
6	8 44 11.36	25.144	13 21 49.3	84.68	6	10 41 13.14	23.594	5 13 53.0	113.10
7	8 46 42.14	25.116	13 13 18.4	85.61	7	10 43 34.61	23.563	5 2 33.7	113.33
8	8 49 12.75	25.088	13 4 42.0	86.52	8	10 45 55.89	23.532	4 51 13.0	113.56
9	8 51 43.19	25.059	12 56 0.2	87.41	9	10 48 16.99	23.502	4 39 51.0	113.78
10	8 54 13.46	25.029	12 47 13.1	88.29	10	10 50 37.91	23.471	4 28 27.7	113.98
11	8 56 43.54	24.999	12 38 20.7	89.17	11	10 52 58.64	23.440	4 17 3.3	114.15
12	8 59 13.45	24.969	12 29 23.1	90.02	12	10 55 19.19	23.411	4 5 37.9	114.32
13	9 1 43.17	24.939	12 20 20.5	90.86	13	10 57 39.57	23.381	3 54 11.5	114.48
14	9 4 12.72	24.908	12 11 12.8	91.69	14	10 59 59.76	23.351	3 42 44.2	114.62
15	9 6 42.07	24.878	12 2 0.2	92.50	15	11 2 19.78	23.323	3 31 16.1	114.74
16	9 9 11.25	24.847	11 52 42.8	93.30	16	11 4 39.63	23.294	3 19 47.3	114.86
17	9 11 40.23	24.814	11 43 20.6	94.09	17	11 6 59.31	23.266	3 8 17.8	114.96
18	9 14 9.02	24.783	11 33 53.7	94.87	18	11 9 18.82	23.238	2 56 47.8	115.04
19	9 16 37.62	24.751	11 24 22.2	95.63	19	11 11 38.16	23.209	2 45 17.3	115.12
20	9 19 6.03	24.718	11 14 46.2	96.38	20	11 13 57.33	23.181	2 33 46.4	115.18
21	9 21 34.24	24.686	11 5 5.7	97.11	21	11 16 16.33	23.154	2 22 15.1	115.23
22	9 24 2.26	24.653	10 55 20.9	97.82	22	11 18 35.18	23.128	2 10 43.6	115.26
23	9 26 30.08	24.620			23	11 20 53.86	23.101		
24	9 28 57.70	24.588	N. 10° 45' 31.9"	98.53	24	11 23 12.39	23.075	N. 1° 59' 12.0"	115.28

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>TUESDAY 17.</b>					<b>THURSDAY 19.</b>				
	h m s	s	N. ° ' "	"		h m s	s	S. ° ' "	"
0	11 23 12.39	23.075	N. 1 59 12.0	115.28	0	13 11 39.13	22.255	S. 6 54 2.2	102.78
1	11 25 30.76	23.049	1 47 40.2	115.29	1	13 13 52.63	22.246	7 4 17.3	102.27
2	11 27 48.98	23.023	1 36 8.5	115.28	2	13 16 6.08	22.239	7 14 29.4	101.76
3	11 30 7.04	22.998	1 24 36.8	115.27	3	13 18 19.49	22.232	7 24 38.4	101.23
4	11 32 24.96	22.974	1 13 5.2	115.24	4	13 20 32.86	22.224	7 34 44.2	100.71
5	11 34 42.73	22.949	1 1 33.9	115.19	5	13 22 46.18	22.218	7 44 46.9	100.18
6	11 37 0.35	22.925	0 50 2.9	115.14	6	13 24 59.47	22.211	7 54 46.3	99.63
7	11 39 17.83	22.902	0 38 32.2	115.07	7	13 27 12.71	22.204	8 4 42.4	99.07
8	11 41 35.17	22.878	0 27 2.0	114.99	8	13 29 25.92	22.198	8 14 35.1	98.50
9	11 43 52.37	22.855	0 15 32.3	114.90	9	13 31 39.09	22.193	8 24 24.4	97.93
10	11 46 9.43	22.833	N. 0 4 3.2	114.80	10	13 33 52.23	22.188	8 34 10.3	97.36
11	11 48 26.36	22.811	S. 0 7 25.3	114.68	11	13 36 5.34	22.183	8 43 52.7	96.78
12	11 50 43.16	22.788	0 18 53.0	114.55	12	13 38 18.42	22.178	8 53 31.6	96.18
13	11 52 59.82	22.767	0 30 19.9	114.42	13	13 40 31.47	22.173	9 3 6.9	95.58
14	11 55 16.36	22.746	0 41 46.0	114.27	14	13 42 44.49	22.168	9 12 38.6	94.98
15	11 57 32.77	22.725	0 53 11.1	114.10	15	13 44 57.49	22.164	9 22 6.6	94.36
16	11 59 49.06	22.705	1 4 35.2	113.92	16	13 47 10.46	22.160	9 31 30.9	93.74
17	12 2 5.23	22.685	1 15 58.2	113.73	17	13 49 23.41	22.157	9 40 51.5	93.11
18	12 4 21.28	22.666	1 27 20.0	113.54	18	13 51 36.34	22.153	9 50 8.2	92.47
19	12 6 37.22	22.647	1 38 40.7	113.33	19	13 53 49.25	22.151	9 59 21.1	91.83
20	12 8 53.04	22.628	1 50 0.0	113.11	20	13 56 2.15	22.148	10 8 30.2	91.18
21	12 11 8.75	22.609	2 1 18.0	112.88	21	13 58 15.03	22.145	10 17 35.3	90.52
22	12 13 24.35	22.591	2 12 34.5	112.63	22	14 0 27.89	22.142	10 26 36.4	89.85
23	12 15 39.84	22.573	S. 2 23 49.6	112.38	23	14 2 40.73	22.140	S. 10 35 33.5	89.18
<b>WEDNESDAY 18.</b>					<b>FRIDAY 20.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	12 17 55.23	22.557	S. 2 35 3.1	112.12	0	14 4 53.57	22.138	S. 10 44 26.6	88.51
1	12 20 10.52	22.540	2 46 15.0	111.84	1	14 7 6.39	22.137	10 53 15.6	87.82
2	12 22 25.71	22.523	2 57 25.2	111.56	2	14 9 19.21	22.135	11 2 0.4	87.13
3	12 24 40.80	22.508	3 8 33.7	111.27	3	14 11 32.01	22.133	11 10 41.1	86.43
4	12 26 55.80	22.492	3 19 40.4	110.96	4	14 13 44.81	22.133	11 19 17.6	85.73
5	12 29 10.70	22.476	3 30 45.2	110.63	5	14 15 57.60	22.131	11 27 49.9	85.02
6	12 31 25.51	22.461	3 41 48.0	110.31	6	14 18 10.38	22.130	11 36 17.9	84.30
7	12 33 40.23	22.447	3 52 48.9	109.98	7	14 20 23.16	22.130	11 44 41.5	83.58
8	12 35 54.87	22.433	4 3 47.7	109.63	8	14 22 35.94	22.129	11 53 0.8	82.86
9	12 38 9.42	22.418	4 14 44.4	109.27	9	14 24 48.71	22.128	12 1 15.8	82.13
10	12 40 23.89	22.406	4 25 38.9	108.90	10	14 27 1.48	22.128	12 9 26.3	81.38
11	12 42 38.29	22.393	4 36 31.2	108.53	11	14 29 14.25	22.129	12 17 32.3	80.63
12	12 44 52.60	22.379	4 47 21.2	108.14	12	14 31 27.03	22.129	12 25 33.9	79.88
13	12 47 6.84	22.368	4 58 8.9	107.75	13	14 33 39.80	22.128	12 33 30.9	79.13
14	12 49 21.01	22.355	5 8 54.2	107.34	14	14 35 52.57	22.128	12 41 23.4	78.37
15	12 51 35.10	22.343	5 19 37.0	106.92	15	14 38 5.34	22.129	12 49 11.3	77.59
16	12 53 49.13	22.333	5 30 17.2	106.49	16	14 40 18.12	22.130	12 56 54.5	76.82
17	12 56 3.09	22.321	5 40 54.9	106.07	17	14 42 30.90	22.130	13 4 33.1	76.04
18	12 58 16.98	22.311	5 51 30.0	105.63	18	14 44 43.68	22.130	13 12 7.0	75.26
19	13 0 30.82	22.301	6 2 2.4	105.17	19	14 46 56.46	22.131	13 19 36.2	74.48
20	13 2 44.59	22.291	6 12 32.0	104.71	20	14 49 9.25	22.133	13 27 0.7	73.68
21	13 4 58.31	22.282	6 22 58.9	104.24	21	14 51 22.05	22.133	13 34 20.3	72.88
22	13 7 11.97	22.272	6 33 22.9	103.76	22	14 53 34.85	22.133	13 41 35.2	72.08
23	13 9 25.57	22.263	6 43 44.0	103.28	23	14 55 47.65	22.134	13 48 45.2	71.26
24	13 11 39.13	22.255	S. 6 54 2.2	102.78	24	14 58 0.46	22.136	S. 13 55 50.3	70.44



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
SATURDAY 21.					MONDAY 23.				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	14 58 0.46	22.136	S. 13 55 50.3	70.44	0	16 44 17.21	22.099	S. 17 52 56.6	27.27
1	15 0 13.28	22.137	14 2 50.5	69.63	1	16 46 29.79	22.094	17 55 37.4	26.32
2	15 2 26.10	22.138	14 9 45.8	68.81	2	16 48 42.34	22.089	17 58 12.4	25.36
3	15 4 38.93	22.139	14 16 36.2	67.98	3	16 50 54.86	22.083	18 0 41.7	24.41
4	15 6 51.77	22.140	14 23 21.6	67.14	4	16 53 7.34	22.078	18 3 5.3	23.45
5	15 9 4.61	22.141	14 30 1.9	66.30	5	16 55 19.79	22.072	18 5 23.1	22.50
6	15 11 17.46	22.142	14 36 37.2	65.47	6	16 57 32.20	22.065	18 7 35.3	21.55
7	15 13 30.31	22.143	14 43 7.5	64.63	7	16 59 44.57	22.058	18 9 41.7	20.59
8	15 15 43.17	22.144	14 49 32.7	63.77	8	17 1 56.90	22.052	18 11 42.4	19.63
9	15 17 56.04	22.146	14 55 52.7	62.92	9	17 4 9.19	22.044	18 13 37.3	18.68
10	15 20 8.92	22.147	15 2 7.7	62.06	10	17 6 21.43	22.037	18 15 26.6	17.73
11	15 22 21.80	22.147	15 8 17.4	61.19	11	17 8 33.63	22.029	18 17 10.1	16.78
12	15 24 34.68	22.148	15 14 22.0	60.33	12	17 10 45.78	22.022	18 18 47.9	15.82
13	15 26 47.57	22.149	15 20 21.4	59.46	13	17 12 57.89	22.013	18 20 19.9	14.86
14	15 29 0.47	22.150	15 26 15.5	58.58	14	17 15 9.94	22.004	18 21 46.2	13.92
15	15 31 13.37	22.151	15 32 4.4	57.71	15	17 17 21.94	21.995	18 23 6.9	12.97
16	15 33 26.28	22.152	15 37 48.0	56.83	16	17 19 33.88	21.986	18 24 21.8	12.00
17	15 35 39.19	22.152	15 43 26.4	55.95	17	17 21 45.77	21.978	18 25 30.9	11.05
18	15 37 52.10	22.153	15 48 59.4	55.06	18	17 23 57.61	21.968	18 26 34.4	10.11
19	15 40 5.02	22.153	15 54 27.1	54.17	19	17 26 9.38	21.957	18 27 32.2	9.16
20	15 42 17.94	22.153	15 59 49.4	53.27	20	17 28 21.09	21.947	18 28 24.3	8.20
21	15 44 30.86	22.154	16 5 6.3	52.38	21	17 30 32.74	21.936	18 29 10.6	7.25
22	15 46 43.79	22.154	16 10 17.9	51.48	22	17 32 44.32	21.925	18 29 51.3	6.31
23	15 48 56.71	22.153	S. 16 15 24.0	50.58	23	17 34 55.84	21.913	S. 18 30 26.3	5.37
SUNDAY 22.					TUESDAY 24.				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	15 51 9.63	22.153	S. 16 20 24.8	49.68	0	17 37 7.28	21.902	S. 18 30 55.7	4.42
1	15 53 22.55	22.153	16 25 20.1	48.76	1	17 39 18.66	21.891	18 31 19.3	3.47
2	15 55 35.47	22.153	16 30 9.9	47.84	2	17 41 29.97	21.878	18 31 37.3	2.53
3	15 57 48.39	22.153	16 34 54.2	46.93	3	17 43 41.20	21.865	18 31 49.7	1.59
4	16 0 1.30	22.152	16 39 33.1	46.02	4	17 45 52.35	21.853	18 31 56.4	0.64
5	16 2 14.21	22.151	16 44 6.4	45.09	5	17 48 3.43	21.840	18 31 57.4	0.29
6	16 4 27.11	22.150	16 48 34.2	44.17	6	17 50 14.43	21.827	18 31 52.9	1.23
7	16 6 40.01	22.149	16 52 56.5	43.25	7	17 52 25.35	21.813	18 31 42.7	2.16
8	16 8 52.90	22.148	16 57 13.2	42.33	8	17 54 36.18	21.798	18 31 27.0	3.09
9	16 11 5.79	22.147	17 1 24.4	41.40	9	17 56 46.93	21.785	18 31 5.6	4.03
10	16 13 18.66	22.144	17 5 30.0	40.47	10	17 58 57.60	21.770	18 30 38.7	4.95
11	16 15 31.52	22.143	17 9 30.0	39.53	11	18 1 8.17	21.754	18 30 6.2	5.88
12	16 17 44.37	22.141	17 13 24.4	38.60	12	18 3 18.65	21.739	18 29 28.2	6.80
13	16 19 57.21	22.138	17 17 13.2	37.66	13	18 5 29.04	21.724	18 28 44.6	7.73
14	16 22 10.03	22.136	17 20 56.3	36.72	14	18 7 39.34	21.709	18 27 55.5	8.64
15	16 24 22.84	22.133	17 24 33.8	35.78	15	18 9 49.55	21.693	18 27 0.9	9.56
16	16 26 35.63	22.131	17 28 5.7	34.85	16	18 11 59.65	21.676	18 26 0.8	10.48
17	16 28 48.41	22.128	17 31 32.0	33.90	17	18 14 9.66	21.659	18 24 55.2	11.38
18	16 31 1.16	22.124	17 34 52.5	32.95	18	18 16 19.56	21.642	18 23 44.2	12.29
19	16 33 13.90	22.121	17 38 7.4	32.01	19	18 18 29.36	21.625	18 22 27.7	13.20
20	16 35 26.61	22.117	17 41 16.6	31.07	20	18 20 39.06	21.608	18 21 5.8	14.10
21	16 37 39.30	22.113	17 44 20.2	30.12	21	18 22 48.66	21.590	18 19 38.5	15.00
22	16 39 51.96	22.108	17 47 18.0	29.17	22	18 24 58.14	21.572	18 18 5.8	15.90
23	16 42 4.60	22.104	17 50 10.2	28.22	23	18 27 7.52	21.554	18 16 27.7	16.79
24	16 44 17.21	22.099	S. 17 52 56.6	27.27	24	18 29 16.79	21.535	S. 18 14 44.3	17.68

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>WEDNESDAY 25.</b>					<b>FRIDAY 27.</b>				
	h m s	s	S. 18° 14' 44".	17.68		h m s	s	S. 15° 14' 48".	55.50
0	18 29 16.79	21.535	18 12 55.5	18.58	0	20 10 6.83	20.423	15 9 13.0	56.17
1	18 31 25.94	21.516	18 11 1.4	19.46	1	20 12 9.29	20.398	15 3 34.0	56.83
2	18 33 34.98	21.498	18 9 2.0	20.33	2	20 14 11.60	20.372	14 57 51.1	57.48
3	18 35 43.91	21.478	18 6 57.4	21.21	3	20 16 13.75	20.346	14 52 4.3	58.13
4	18 37 52.72	21.458	18 4 47.5	22.09	4	20 18 15.75	20.320	14 46 13.6	58.77
5	18 40 1.41	21.438	18 2 32.3	22.96	5	20 20 17.59	20.294	14 40 19.1	59.40
6	18 42 9.98	21.418	18 0 12.0	23.83	6	20 22 19.28	20.269	14 34 20.8	60.03
7	18 44 18.43	21.398	17 57 46.4	24.69	7	20 24 20.82	20.244	14 28 18.7	60.66
8	18 46 26.76	21.378	17 55 15.7	25.55	8	20 26 22.21	20.218	14 22 12.9	61.28
9	18 48 34.97	21.358	17 52 39.8	26.40	9	20 28 23.44	20.193	14 16 3.4	61.88
10	18 50 43.05	21.336	17 49 58.9	27.25	10	20 30 24.52	20.167	14 9 50.3	62.49
11	18 52 51.00	21.314	17 47 12.8	28.10	11	20 32 25.44	20.142	14 3 33.5	63.10
12	18 54 58.82	21.293	17 44 21.7	28.94	12	20 34 26.22	20.117	13 57 13.1	63.69
13	18 57 6.52	21.272	17 41 25.5	29.78	13	20 36 26.84	20.092	13 50 49.2	64.28
14	18 59 14.09	21.250	17 38 24.3	30.62	14	20 38 27.32	20.067	13 44 21.7	64.87
15	19 1 21.52	21.228	17 35 18.1	31.45	15	20 40 27.64	20.041	13 37 50.8	65.44
16	19 3 28.82	21.206	17 32 6.9	32.28	16	20 42 27.81	20.016	13 31 16.4	66.02
17	19 5 35.99	21.183	17 28 50.7	33.10	17	20 44 27.83	19.992	13 24 38.6	66.58
18	19 7 43.02	21.160	17 25 29.7	33.91	18	20 46 27.71	19.967	13 17 57.4	67.14
19	19 9 49.91	21.138	17 22 3.8	34.73	19	20 48 27.43	19.941	13 11 12.9	67.70
20	19 11 56.67	21.115	17 18 33.0	35.54	20	20 50 27.00	19.917	13 4 25.0	68.25
21	19 14 3.29	21.093	17 14 57.3	36.34	21	20 52 26.43	19.893	12 57 33.9	68.78
22	19 16 9.78	21.069	17 11 16.9	37.14	22	20 54 25.71	19.868	12 50 39.6	69.32
23	19 18 16.12	21.045			23	20 56 24.85	19.844		
<b>THURSDAY 26.</b>					<b>SATURDAY 28.</b>				
	h m s	s	S. 17° 7' 31".	37.94		h m s	s	S. 12° 43' 42".	69.85
0	19 20 22.32	21.021	17 3 41.6	38.73	0	20 58 23.84	19.820	12 36 41.4	70.38
1	19 22 28.37	20.998	16 59 46.9	39.51	1	21 0 22.69	19.796	12 29 37.5	70.90
2	19 24 34.29	20.974	16 55 47.5	40.29	2	21 2 21.39	19.772	12 22 30.6	71.40
3	19 26 40.06	20.949	16 51 43.4	41.07	3	21 4 19.95	19.748	12 15 20.7	71.91
4	19 28 45.68	20.925	16 47 34.6	41.84	4	21 6 18.37	19.725	12 8 7.7	72.42
5	19 30 51.16	20.902	16 43 21.3	42.60	5	21 8 16.65	19.702	12 0 51.7	72.92
6	19 32 56.50	20.877	16 39 3.4	43.37	6	21 10 14.79	19.678	11 53 32.7	73.40
7	19 35 1.68	20.852	16 34 40.9	44.13	7	21 12 12.79	19.655	11 46 10.9	73.88
8	19 37 6.72	20.828	16 30 13.9	44.88	8	21 14 10.65	19.632	11 38 46.2	74.36
9	19 39 11.61	20.803	16 25 42.4	45.63	9	21 16 8.37	19.609	11 31 18.6	74.83
10	19 41 16.35	20.778	16 21 6.4	46.36	10	21 18 5.96	19.588	11 23 48.2	75.29
11	19 43 20.94	20.753	16 16 26.1	47.09	11	21 20 3.42	19.565	11 16 15.1	75.75
12	19 45 25.38	20.728	16 11 41.3	47.83	12	21 22 0.74	19.543	11 8 39.2	76.21
13	19 47 29.67	20.703	16 6 52.2	48.55	13	21 23 57.93	19.521	11 1 0.6	76.66
14	19 49 33.81	20.678	16 1 58.7	49.27	14	21 25 54.99	19.499	10 53 19.3	77.09
15	19 51 37.80	20.653	15 57 1.0	49.98	15	21 27 51.92	19.478	10 45 35.5	77.53
16	19 53 41.64	20.628	15 51 58.9	50.69	16	21 29 48.72	19.456	10 37 49.0	77.96
17	19 55 45.33	20.602	15 46 52.7	51.39	17	21 31 45.39	19.435	10 30 0.0	78.38
18	19 57 48.86	20.576	15 41 42.2	52.09	18	21 33 41.94	19.414	10 22 8.4	78.80
19	19 59 52.24	20.550	15 36 27.6	52.78	19	21 35 38.36	19.393	10 14 14.4	79.21
20	20 1 55.46	20.525	15 31 45.9	53.47	20	21 37 34.66	19.373	10 6 17.9	79.61
21	20 3 58.54	20.500	15 25 19.0	54.15	21	21 39 30.84	19.353	9 58 19.0	80.02
22	20 6 1.46	20.473	15 20 19.0	54.83	22	21 41 26.89	19.333	9 50 17.7	80.41
23	20 8 4.22	20.448			23	21 43 22.83	19.313		
24	20 10 6.83	20.423	S. 15° 14' 48".	55.50	24	21 45 18.65	19.293	S. 9° 42' 14".	80.79

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 29.</b>					<b>TUESDAY 31.</b>				
	h m s	s				h m s	s		
0	21 45 18.65	19.293	S. 9 42' 14".1	80.79	0	23 16 14.46	18.724	S. 2 40' 50".4	92.60
1	21 47 14.35	19.274	9 34 8.2	81.18	1	23 18 6.79	18.721	2 31 34.5	92.71
2	21 49 9.94	19.256	9 26 0.0	81.55	2	23 19 59.11	18.719	2 22 17.9	92.82
3	21 51 5.42	19.237	9 17 49.6	81.92	3	23 21 51.42	18.717	2 13 0.7	92.92
4	21 53 0.78	19.218	9 9 37.0	82.28	4	23 23 43.71	18.715	2 3 42.9	93.01
5	21 54 56.04	19.200	9 1 22.2	82.64	5	23 25 36.00	18.714	1 54 24.6	93.09
6	21 56 51.18	19.182	8 53 5.3	82.99	6	23 27 28.28	18.713	1 45 5.8	93.18
7	21 58 46.22	19.165	8 44 46.3	83.33	7	23 29 20.55	18.713	1 35 46.5	93.25
8	22 0 41.16	19.148	8 36 25.3	83.68	8	23 31 12.83	18.713	1 26 26.8	93.33
9	22 2 35.99	19.130	8 28 2.2	84.02	9	23 33 5.10	18.713	1 17 6.6	93.39
10	22 4 30.72	19.113	8 19 37.1	84.34	10	23 34 57.38	18.713	1 7 46.1	93.44
11	22 6 25.35	19.097	8 11 10.1	84.67	11	23 36 49.66	18.715	0 58 25.3	93.50
12	22 8 19.88	19.081	8 2 41.1	84.98	12	23 38 41.96	18.717	0 49 4.1	93.55
13	22 10 14.32	19.065	7 54 10.3	85.29	13	23 40 34.26	18.718	0 39 42.7	93.59
14	22 12 8.66	19.049	7 45 37.6	85.60	14	23 42 26.58	18.721	0 30 21.0	93.63
15	22 14 2.91	19.034	7 37 3.1	85.90	15	23 44 18.91	18.724	0 20 59.2	93.66
16	22 15 57.07	19.019	7 28 26.8	86.19	16	23 46 11.27	18.728	0 11 37.1	93.69
17	22 17 51.14	19.004	7 19 48.8	86.48	17	23 48 3.64	18.731	S. 0 2 14.9	93.71
18	22 19 45.12	18.990	7 11 9.1	86.76	18	23 49 56.04	18.736	N. 0 7 7.4	93.73
19	22 21 39.02	18.977	7 2 27.7	87.04	19	23 51 48.47	18.740	0 16 29.8	93.74
20	22 23 32.84	18.963	6 53 44.6	87.32	20	23 53 40.92	18.745	0 25 52.3	93.75
21	22 25 26.57	18.949	6 44 59.9	87.58	21	23 55 33.41	18.751	0 35 14.8	93.74
22	22 27 20.23	18.936	6 36 13.7	87.83	22	23 57 25.93	18.757	0 44 37.2	93.73
23	22 29 13.80	18.923	S. 6 27 25.9	88.08	23	23 59 18.49	18.763	N. 0 53 59.6	93.73
<b>MONDAY 30.</b>					<b>WEDNESDAY, FEB. 1.</b>				
0	22 31 7.31	18.912	S. 6 18 36.7	88.33	0	0 1 11.09	18.770	N. 1 3 21.9	93.71
1	22 33 0.74	18.899	6 9 45.9	88.58					
2	22 34 54.10	18.888	6 0 53.7	88.82					
3	22 36 47.39	18.876	5 52 0.1	89.04					
4	22 38 40.61	18.865	5 43 5.2	89.27					
5	22 40 33.77	18.855	5 34 8.9	89.49					
6	22 42 26.87	18.845	5 25 11.3	89.71					
7	22 44 19.91	18.835	5 16 12.4	89.92					
8	22 46 12.89	18.825	5 7 12.3	90.12					
9	22 48 5.81	18.816	4 58 11.0	90.31					
10	22 49 58.68	18.808	4 49 8.6	90.50					

## AT APPARENT NOON.

Date.	THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var. in hour.
	Apparent Right Ascension.	Var. in hour.	Apparent Declination.	Var. in hour.			
	h m s	s	° ' "	"	m s	m s	s
Wed.	1 20 57 21.60	10.208	S. 17 14 0.3	42.33	1 8.27	13 41.11	0.351
Thur.	2 21 1 26.18	10.174	16 56 55.2	43.08	1 8.15	13 49.12	0.316
Frid.	3 21 5 29.93	10.139	16 39 32.4	43.81	1 8.04	13 56.29	0.281
Sat.	4 21 9 32.83	10.104	16 21 52.2	44.53	1 7.92	14 2.62	0.246
Sun.	5 21 13 34.90	10.069	16 3 55.1	45.22	1 7.81	14 8.12	0.212
Mon.	6 21 17 36.13	10.034	15 45 41.6	45.90	1 7.70	14 12.79	0.177
Tues.	7 21 21 36.54	10.000	15 27 11.9	46.56	1 7.58	14 16.63	0.143
Wed.	8 21 25 36.12	9.966	15 8 26.6	47.21	1 7.47	14 19.64	0.109
Thur.	9 21 29 34.89	9.932	14 49 26.0	47.84	1 7.36	14 21.85	0.075
Frid.	10 21 33 32.85	9.899	14 30 10.5	48.45	1 7.25	14 23.26	0.042
Sat.	11 21 37 30.02	9.866	14 10 40.5	49.04	1 7.14	14 23.87	0.009
Sun.	12 21 41 26.41	9.834	13 50 56.4	49.62	1 7.03	14 23.71	0.023
Mon.	13 21 45 22.04	9.803	13 30 58.7	50.18	1 6.92	14 22.79	0.054
Tues.	14 21 49 16.93	9.772	13 10 47.7	50.73	1 6.81	14 21.12	0.085
Wed.	15 21 53 11.08	9.741	12 50 23.8	51.26	1 6.71	14 18.73	0.115
Thur.	16 21 57 4.51	9.712	12 29 47.4	51.77	1 6.60	14 15.62	0.145
Frid.	17 22 0 57.24	9.683	12 8 58.9	52.26	1 6.50	14 11.81	0.173
Sat.	18 22 4 49.28	9.654	11 47 58.7	52.74	1 6.40	14 7.30	0.202
Sun.	19 22 8 40.65	9.626	11 26 47.3	53.20	1 6.30	14 2.13	0.229
Mon.	20 22 12 31.35	9.599	11 5 25.1	53.64	1 6.20	13 56.30	0.256
Tues.	21 22 16 21.40	9.572	10 43 52.4	54.07	1 6.10	13 49.82	0.283
Wed.	22 22 20 10.82	9.546	10 22 9.8	54.48	1 6.01	13 42.70	0.310
Thur.	23 22 23 59.61	9.520	10 0 17.6	54.87	1 5.92	13 34.96	0.335
Frid.	24 22 27 47.79	9.495	9 38 16.2	55.24	1 5.83	13 26.61	0.360
Sat.	25 22 31 35.37	9.470	9 16 6.1	55.60	1 5.74	13 17.66	0.385
Sun.	26 22 35 22.37	9.446	8 53 47.6	55.93	1 5.66	13 8.13	0.409
Mon.	27 22 39 8.79	9.423	8 31 21.3	56.25	1 5.58	12 58.03	0.432
Tues.	28 22 42 54.66	9.400	8 8 47.4	56.56	1 5.50	12 47.38	0.455
Wed.	29 22 46 39.99	9.378	S. 7 46 6.5	56.84	1 5.42	12 36.18	0.477

\* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.

## AT MEAN NOON.

		THE SUN'S			Equation of Time, to be added to Apparent Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
Date.						
		h m s	° ' "	' "	m s	h m s
Wed.	1	20 57 19.27	S. 17 14 9.9	16 15.30	13 41.03	20 43 38.24
Thur.	2	21 1 23.84	16 57 5.1	16 15.16	13 49.05	20 47 34.80
Frid.	3	21 5 27.57	16 39 42.6	16 15.01	13 56.22	20 51 31.35
Sat.	4	21 9 30.47	16 22 2.6	16 14.86	14 2.56	20 55 27.90
Sun.	5	21 13 32.53	16 4 5.8	16 14.71	14 8.07	20 59 24.46
Mon.	6	21 17 33.76	15 45 52.5	16 14.56	14 12.74	21 3 21.01
Tues.	7	21 21 34.16	15 27 23.0	16 14.40	14 16.59	21 7 17.57
Wed.	8	21 25 33.74	15 8 37.8	16 14.23	14 19.62	21 11 14.12
Thur.	9	21 29 32.51	14 49 37.4	16 14.06	14 21.83	21 15 10.68
Frid.	10	21 33 30.48	14 30 22.1	16 13.88	14 23.25	21 19 7.23
Sat.	11	21 37 27.65	14 10 52.2	16 13.70	14 23.87	21 23 3.78
Sun.	12	21 41 24.06	13 51 8.3	16 13.52	14 23.72	21 27 0.34
Mon.	13	21 45 19.70	13 31 10.7	16 13.32	14 22.80	21 30 56.89
Tues.	14	21 49 14.59	13 10 59.8	16 13.13	14 21.14	21 34 53.44
Wed.	15	21 53 8.76	12 50 36.0	16 12.93	14 18.76	21 38 50.00
Thur.	16	21 57 2.20	12 29 59.7	16 12.72	14 15.65	21 42 46.55
Frid.	17	22 0 54.95	12 9 11.3	16 12.51	14 11.85	21 46 43.10
Sat.	18	22 4 47.01	11 48 11.2	16 12.30	14 7.35	21 50 39.66
Sun.	19	22 8 38.40	11 26 59.8	16 12.08	14 2.18	21 54 36.21
Mon.	20	22 12 29.12	11 5 37.6	16 11.86	13 56.36	21 58 32.76
Tues.	21	22 16 19.20	10 44 4.9	16 11.64	13 49.88	22 2 29.32
Wed.	22	22 20 8.64	10 22 22.2	16 11.41	13 42.77	22 6 25.87
Thur.	23	22 23 57.46	10 0 30.0	16 11.19	13 35.03	22 10 22.42
Frid.	24	22 27 45.66	9 38 28.5	16 10.96	13 26.69	22 14 18.98
Sat.	25	22 31 33.27	9 16 18.4	16 10.73	13 17.75	22 18 15.53
Sun.	26	22 35 20.30	8 53 59.8	16 10.50	13 8.22	22 22 12.08
Mon.	27	22 39 6.76	8 31 33.4	16 10.26	12 58.12	22 26 8.63
Tues.	28	22 42 52.66	8 8 59.5	16 10.03	12 47.47	22 30 5.19
Wed.	29	22 46 38.02	S. 7 46 18.4	16 9.79	12 36.28	22 34 1.74

\* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
				h m s				
1	311° 52' 3" 6	N. 0° 16'	9.9936679	3 15 49.59	14 47.47	14 49.72	54 11.45	54 19.71
2	312 52 56.7	N. 0.03	.9937306	3 11 53.68	14 52.56	14 56.01	54 30.10	54 42.73
3	313 53 48.5	S. 0.09	.9937950	3 7 57.77	15 0.08	15 4.78	54 57.65	55 14.87
4	314 54 38.9	0.21	9.9938610	3 4 1.86	15 10.10	15 16.01	55 34.35	55 56.04
5	315 55 27.8	0.32	.9939288	3 0 5.96	15 22.49	15 29.49	56 19.79	56 45.41
6	316 56 15.2	0.40	.9939984	2 56 10.05	15 36.92	15 44.68	57 12.63	57 41.08
7	317 57 1.1	0.46	9.9940701	2 52 14.14	15 52.65	16 0.71	58 10.31	58 39.82
8	318 57 45.5	0.50	.9941438	2 48 18.23	16 8.67	16 16.34	59 8.96	59 37.06
9	319 58 28.4	0.49	.9942197	2 44 22.32	16 23.52	16 30.02	60 3.39	60 27.20
10	320 59 9.7	0.46	9.9942979	2 40 26.41	16 35.63	16 40.18	60 47.76	61 4.42
11	321 59 49.6	0.39	.9943785	2 36 30.51	16 43.50	16 45.48	61 16.58	61 23.86
12	323 0 28.0	0.30	.9944614	2 32 34.60	16 46.07	16 45.25	61 26.01	61 22.99
13	324 1 5.0	0.19	9.9945467	2 28 38.69	16 43.05	16 39.59	61 14.96	61 2.28
14	325 1 40.8	S. 0.07	.9946343	2 24 42.78	16 34.99	16 29.40	60 45.41	60 24.95
15	326 2 15.3	N. 0.07	.9947241	2 20 46.88	16 23.04	16 16.10	60 1.64	59 36.19
16	327 2 48.5	0.21	9.9948158	2 16 50.97	16 8.75	16 1.18	59 9.25	58 41.55
17	328 3 20.6	0.33	.9949094	2 12 55.06	15 53.57	15 46.08	58 13.68	57 46.19
18	329 3 51.3	0.44	.9950047	2 8 59.15	15 38.79	15 31.82	57 19.47	56 53.95
19	330 4 20.9	0.52	9.9951015	2 5 3.24	15 25.24	15 19.11	56 29.84	56 7.40
20	331 4 49.1	0.59	.9951996	2 1 7.34	15 13.47	15 8.34	55 46.72	55 27.92
21	332 5 16.0	0.63	.9952990	1 57 11.43	15 3.73	14 59.63	55 11.01	54 56.00
22	333 5 41.5	0.62	9.9953995	1 53 15.52	14 56.03	14 52.92	54 42.81	54 31.43
23	334 6 5.5	0.59	.9955009	1 49 19.62	14 50.28	14 48.08	54 21.76	54 13.70
24	335 6 28.0	0.54	.9956032	1 45 23.71	14 46.32	14 44.95	54 7.24	54 2.22
25	336 6 49.0	0.46	9.9957063	1 41 27.80	14 43.97	14 43.36	53 58.63	53 56.38
26	337 7 8.2	0.37	.9958101	1 37 31.90	14 43.10	14 43.19	53 55.45	53 55.79
27	338 7 25.8	0.25	.9959147	1 33 35.99	14 43.64	14 44.43	53 57.43	54 0.34
28	339 7 41.6	N. 0.12	.9960199	1 29 40.08	14 45.59	14 47.13	54 4.58	54 10.21
29	340 7 55.5	S. 0.01	9.9961257	1 25 44.18	14 49.05	14 51.38	54 17.25	54 25.80

## MEAN TIME.

Day.	THE MOON'S						
	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
	° ′ ″	° ′ ″	N. ° ′ ″	N. ° ′ ″	d	h m	h m
1	0 41 31.2	6 36 50.6	N. 0 51 3.7	N. 0 19 30.5	4.51	3 23.4	15 44.6
2	12 33 47.1	18 32 55.6	S. 0 12 26.2	S. 0 44 28.4	5.51	4 6.1	16 27.9
3	24 34 52.7	30 40 16.3	1 16 17.0	1 47 32.8	6.51	4 50.2	17 12.9
4	36 49 45.5	43 3 59.4	2 17 55.4	2 47 3.3	7.51	5 36.2	18 0.2
5	49 23 35.7	55 49 10.7	3 14 33.9	3 40 3.4	8.51	6 24.8	18 50.3
6	62 21 16.7	69 0 21.3	4 3 7.2	4 23 19.4	9.51	7 16.5	19 43.6
7	75 46 45.4	82 40 41.3	4 40 13.9	4 53 24.7	10.51	8 11.4	20 39.8
8	89 42 11.3	96 51 6.1	5 2 26.8	5 6 58.0	11.51	9 8.8	21 38.3
9	104 7 2.9	111 29 25.7	5 6 39.4	5 1 17.4	12.51	10 8.0	22 37.9
10	118 57 25.4	126 30 0.6	4 50 45.3	4 35 4.4	13.51	11 7.7	23 37.3
11	134 5 59.5	141 44 3.3	4 14 24.9	3 49 6.3	14.51	12 6.7	* *
12	149 22 49.1	157 0 54.4	3 19 37.1	2 46 33.5	15.51	13 4.3	0 35.7
13	164 36 59.8	172 9 53.3	2 10 37.7	1 32 36.1	16.51	14 0.3	1 32.5
14	179 38 31.8	187 2 4.1	S. 0 53 16.9	S. 0 13 27.7	17.51	14 55.0	2 27.8
15	194 19 50.4	201 31 23.6	N. 0 26 6.3	N. 1 4 43.4	18.51	15 48.5	3 21.9
16	208 36 27.8	215 34 57.6	1 41 46.8	2 16 45.0	19.51	16 41.4	4 15.0
17	222 26 56.6	229 12 35.9	2 49 11.8	3 18 45.8	20.51	17 33.7	5 7.6
18	235 52 11.7	242 26 5.6	3 45 10.5	4 8 13.6	21.51	18 25.5	5 59.7
19	248 54 41.2	255 18 24.2	4 27 46.2	4 43 42.3	22.51	19 16.7	6 51.2
20	261 37 41.0	267 52 58.1	4 55 58.9	5 4 35.1	23.51	20 6.9	7 41.9
21	274 4 41.2	280 13 15.1	5 9 31.7	5 10 51.3	24.51	20 55.8	8 31.5
22	286 19 2.9	292 22 26.3	5 8 38.2	5 2 57.8	25.51	21 43.3	9 19.7
23	298 23 45.1	304 23 17.6	4 53 57.1	4 41 44.4	26.51	22 29.2	10 6.4
24	310 21 20.7	316 18 9.9	4 26 29.4	4 8 22.8	27.51	23 13.8	10 51.6
25	322 13 59.6	328 9 3.9	3 47 36.8	3 24 24.8	28.51	23 57.2	11 35.6
26	334 3 36.2	339 57 50.1	2 59 1.2	2 31 41.7	29.51	* *	12 18.5
27	345 51 59.6	351 46 19.8	2 2 42.6	1 32 21.3	0.72	0 39.8	13 1.0
28	357 41 6.3	3 36 36.3	N. 1 0.55.8	N. 0 28 44.9	1.72	1 22.2	13 43.4
29	9 33 8.7	15 31 3.9	S. 0 3 52.4	S. 0 36 36.6	2.72	2 4.8	14 26.4

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 1.</b>					<b>FRIDAY 3.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	0 1 11.09	18.770	N. 1 3 21.9	93.71	0	1 32 57.06	19.644	N. 8 20 39.8	86.28
1	0 3 3.73	18.778	1 12 44.1	93.69	1	1 34 55.01	19.673	8 29 16.5	85.96
2	0 4 56.42	18.786	1 22 6.2	93.67	2	1 36 53.14	19.704	8 37 51.3	85.66
3	0 6 49.16	18.793	1 31 28.1	93.63	3	1 38 51.46	19.735	8 46 24.4	85.35
4	0 8 41.94	18.802	1 40 49.7	93.58	4	1 40 49.96	19.765	8 54 55.5	85.02
5	0 10 34.78	18.812	1 50 11.1	93.55	5	1 42 48.64	19.796	9 3 24.6	84.69
6	0 12 27.68	18.822	1 59 32.3	93.50	6	1 44 47.51	19.828	9 11 51.8	84.36
7	0 14 20.64	18.832	2 8 53.1	93.44	7	1 46 46.58	19.861	9 20 16.9	84.02
8	0 16 13.66	18.842	2 18 13.6	93.38	8	1 48 45.84	19.893	9 28 40.0	83.67
9	0 18 6.74	18.853	2 27 33.7	93.32	9	1 50 45.30	19.927	9 37 0.9	83.31
10	0 19 59.89	18.864	2 36 53.4	93.25	10	1 52 44.96	19.960	9 45 19.7	82.96
11	0 21 53.11	18.877	2 46 12.7	93.17	11	1 54 44.82	19.993	9 53 36.4	82.59
12	0 23 46.41	18.889	2 55 31.4	93.08	12	1 56 44.88	20.027	10 1 50.8	82.21
13	0 25 39.78	18.901	3 4 49.7	93.00	13	1 58 45.15	20.063	10 10 2.9	81.83
14	0 27 33.22	18.914	3 14 7.4	92.90	14	2 0 45.64	20.098	10 18 12.7	81.43
15	0 29 26.75	18.928	3 23 24.5	92.80	15	2 2 46.33	20.133	10 26 20.1	81.03
16	0 31 20.36	18.943	3 32 41.0	92.70	16	2 4 47.24	20.170	10 34 25.1	80.63
17	0 33 14.06	18.958	3 41 56.9	92.59	17	2 6 48.37	20.207	10 42 27.7	80.23
18	0 35 7.85	18.973	3 51 12.1	92.48	18	2 8 49.72	20.243	10 50 27.8	79.81
19	0 37 1.73	18.988	4 0 26.6	92.34	19	2 10 51.29	20.281	10 58 25.4	79.38
20	0 38 55.71	19.005	4 9 40.3	92.23	20	2 12 53.09	20.319	11 6 20.4	78.95
21	0 40 49.79	19.021	4 18 53.3	92.09	21	2 14 55.12	20.357	11 14 12.8	78.52
22	0 42 43.96	19.038	4 28 5.4	91.95	22	2 16 57.37	20.395	11 22 2.6	78.08
23	0 44 38.24	19.056	N. 4 37 16.7	91.81	23	2 18 59.86	20.434	N. 11 29 49.7	77.62
<b>THURSDAY 2.</b>					<b>SATURDAY 4.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	0 46 32.63	19.073	N. 4 46 27.1	91.66	0	2 21 2.58	20.473	N. 11 37 34.0	77.15
1	0 48 27.12	19.092	4 55 36.6	91.50	1	2 23 5.54	20.513	11 45 15.5	76.68
2	0 50 21.73	19.111	5 4 45.1	91.34	2	2 25 8.74	20.553	11 52 54.2	76.21
3	0 52 16.45	19.129	5 13 52.7	91.18	3	2 27 12.18	20.594	12 0 30.0	75.74
4	0 54 11.28	19.149	5 22 59.2	90.99	4	2 29 15.87	20.635	12 8 2.9	75.24
5	0 56 6.24	19.171	5 32 4.6	90.82	5	2 31 19.80	20.676	12 15 32.9	74.74
6	0 58 1.33	19.192	5 41 9.0	90.64	6	2 33 23.98	20.718	12 22 59.8	74.23
7	0 59 56.54	19.212	5 50 12.3	90.44	7	2 35 28.41	20.759	12 30 23.7	73.72
8	1 1 51.87	19.233	5 59 14.3	90.24	8	2 37 33.09	20.802	12 37 44.4	73.19
9	1 3 47.34	19.256	6 8 15.2	90.05	9	2 39 38.03	20.844	12 45 2.0	72.67
10	1 5 42.94	19.278	6 17 14.9	89.83	10	2 41 43.22	20.887	12 52 16.4	72.13
11	1 7 38.68	19.302	6 26 13.2	89.62	11	2 43 48.67	20.930	12 59 27.6	71.59
12	1 9 34.56	19.325	6 35 10.3	89.40	12	2 45 54.38	20.973	13 6 35.5	71.03
13	1 11 30.58	19.349	6 44 6.0	89.18	13	2 48 0.35	21.018	13 13 40.0	70.48
14	1 13 26.75	19.374	6 53 0.4	88.94	14	2 50 6.59	21.063	13 20 41.2	69.91
15	1 15 23.07	19.398	7 1 53.3	88.70	15	2 52 13.10	21.107	13 27 38.9	69.33
16	1 17 19.53	19.424	7 10 44.8	88.45	16	2 54 19.87	21.151	13 34 33.2	68.75
17	1 19 16.16	19.451	7 19 34.7	88.20	17	2 56 26.91	21.196	13 41 23.9	68.15
18	1 21 12.94	19.476	7 28 23.2	87.95	18	2 58 34.22	21.242	13 48 11.0	67.55
19	1 23 9.87	19.503	7 37 10.1	87.68	19	3 0 41.81	21.288	13 54 54.5	66.95
20	1 25 6.97	19.531	7 45 55.4	87.41	20	3 2 49.67	21.334	14 1 34.4	66.33
21	1 27 4.24	19.559	7 54 39.0	87.13	21	3 4 57.81	21.379	14 8 10.5	65.70
22	1 29 1.68	19.587	8 3 21.0	86.85	22	3 7 6.22	21.426	14 14 42.8	65.07
23	1 30 59.28	19.615	8 12 1.2	86.57	23	3 9 14.92	21.473	14 21 11.3	64.43
24	1 32 57.06	19.644	N. 8 20 39.8	86.28	24	3 11 23.89	21.519	N. 14 27 35.9	63.78



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10m.	Declination.	Var. in 10m.	Hour.	Right Ascension.	Var. in 10m.	Declination.	Var. in 10m.
<b>SUNDAY 5.</b>					<b>TUESDAY 7.</b>				
	h m s	s	N. 14 27 35.9	63.78		h m s	s	N. 18 2 33.1	22.49
0	3 11 23.89	21.519			0	5 0 18.71	23.849		
1	3 13 33.15	21.567	14 33 56.6	63.12	1	5 2 41.94	23.894	18 4 44.9	21.43
2	3 15 42.69	21.614	14 40 13.3	62.45	2	5 5 5.44	23.938	18 6 50.2	20.35
3	3 17 52.52	21.662	14 46 26.0	61.78	3	5 7 29.20	23.983	18 8 49.1	19.28
4	3 20 2.63	21.710	14 52 34.7	61.10	4	5 9 53.23	24.028	18 10 41.5	18.18
5	3 22 13.04	21.758	14 58 39.2	60.40	5	5 12 17.53	24.071	18 12 27.3	17.09
6	3 24 23.73	21.805	15 4 39.5	59.70	6	5 14 42.08	24.113	18 14 6.5	15.98
7	3 26 34.70	21.853	15 10 35.6	58.99	7	5 17 6.89	24.157	18 15 39.1	14.88
8	3 28 45.97	21.903	15 16 27.4	58.27	8	5 19 31.96	24.199	18 17 5.1	13.76
9	3 30 57.54	21.952	15 22 14.8	57.54	9	5 21 57.28	24.241	18 18 24.3	12.64
10	3 33 9.39	22.000	15 27 57.9	56.82	10	5 24 22.85	24.282	18 19 36.8	11.51
11	3 35 21.54	22.049	15 33 36.6	56.07	11	5 26 48.66	24.322	18 20 42.4	10.37
12	3 37 33.98	22.098	15 39 10.7	55.32	12	5 29 14.71	24.363	18 21 41.2	9.23
13	3 39 46.72	22.148	15 44 40.4	54.56	13	5 31 41.01	24.403	18 22 33.2	8.09
14	3 41 59.75	22.197	15 50 5.4	53.78	14	5 34 7.55	24.443	18 23 18.3	6.93
15	3 44 13.08	22.246	15 55 25.8	53.01	15	5 36 34.32	24.481	18 23 56.4	5.77
16	3 46 26.70	22.295	16 0 41.5	52.23	16	5 39 1.32	24.519	18 24 27.5	4.60
17	3 48 40.62	22.345	16 5 52.5	51.43	17	5 41 28.55	24.557	18 24 51.6	3.43
18	3 50 54.84	22.395	16 10 58.6	50.62	18	5 43 56.00	24.593	18 25 8.6	2.25
19	3 53 9.36	22.444	16 15 59.9	49.81	19	5 46 23.67	24.630	18 25 18.6	1.07
20	3 55 24.17	22.494	16 20 56.3	48.99	20	5 48 51.56	24.666	18 25 21.4	0.13
21	3 57 39.29	22.544	16 25 47.8	48.16	21	5 51 19.66	24.701	18 25 17.1	1.32
22	3 59 54.70	22.593	16 30 34.2	47.32	22	5 53 47.97	24.736	18 25 5.6	2.52
23	4 2 10.41	22.643	N. 16 35 15.6	46.47	23	5 56 16.49	24.770	N. 18 24 46.9	3.73
<b>MONDAY 6.</b>					<b>WEDNESDAY 8.</b>				
0	4 4 26.42	22.693	N. 16 39 51.8	45.61	0	5 58 45.21	24.803	N. 18 24 20.9	4.93
1	4 6 42.72	22.743	16 44 22.9	44.75	1	6 1 14.13	24.836	18 23 47.7	6.14
2	4 8 59.33	22.793	16 48 48.8	43.87	2	6 3 43.24	24.868	18 23 7.2	7.36
3	4 11 16.23	22.842	16 53 9.3	42.98	3	6 6 12.54	24.899	18 22 19.4	8.58
4	4 13 33.43	22.892	16 57 24.6	42.10	4	6 8 42.03	24.930	18 21 24.2	9.81
5	4 15 50.93	22.942	17 1 34.5	41.20	5	6 11 11.70	24.960	18 20 21.7	11.03
6	4 18 8.73	22.991	17 5 39.0	40.28	6	6 13 41.55	24.989	18 19 11.8	12.28
7	4 20 26.82	23.039	17 9 37.9	39.37	7	6 16 11.57	25.018	18 17 54.4	13.51
8	4 22 45.20	23.088	17 13 31.4	38.45	8	6 18 41.76	25.045	18 16 29.7	14.74
9	4 25 3.88	23.138	17 17 19.3	37.51	9	6 21 12.11	25.073	18 14 57.5	15.98
10	4 27 22.86	23.188	17 21 1.5	36.56	10	6 23 42.63	25.099	18 13 17.9	17.23
11	4 29 42.13	23.236	17 24 38.0	35.62	11	6 26 13.30	25.124	18 11 30.8	18.48
12	4 32 1.69	23.284	17 28 8.9	34.66	12	6 28 44.12	25.149	18 9 36.2	19.73
13	4 34 21.54	23.333	17 31 33.9	33.68	13	6 31 15.09	25.173	18 7 34.1	20.98
14	4 36 41.69	23.382	17 34 53.1	32.71	14	6 33 46.20	25.197	18 5 24.5	22.23
15	4 39 2.12	23.428	17 38 6.4	31.73	15	6 36 17.45	25.220	18 3 7.3	23.48
16	4 41 22.83	23.476	17 41 13.8	30.73	16	6 38 48.84	25.242	18 0 42.7	24.73
17	4 43 43.83	23.523	17 44 15.2	29.73	17	6 41 20.35	25.262	17 58 10.5	25.99
18	4 46 5.11	23.571	17 47 10.5	28.72	18	6 43 51.98	25.283	17 55 30.8	27.25
19	4 48 26.68	23.618	17 49 59.8	27.70	19	6 46 23.74	25.303	17 52 43.5	28.51
20	4 50 48.53	23.665	17 52 42.9	26.67	20	6 48 55.61	25.321	17 49 48.7	29.77
21	4 53 10.66	23.711	17 55 19.8	25.63	21	6 51 27.59	25.338	17 46 46.3	31.03
22	4 55 33.06	23.758	17 57 50.5	24.60	22	6 53 59.67	25.355	17 43 36.4	32.28
23	4 57 55.75	23.804	18 0 15.0	23.55	23	6 56 31.85	25.372	17 40 18.9	33.54
24	5 0 18.71	23.849	N. 18 2 33.1	22.49	24	6 59 4.13	25.388	N. 17 36 53.9	34.80

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>THURSDAY 9.</b>					<b>SATURDAY 11.</b>				
	h m s	s	N. 17 30 53.9	34.80		h m s	s	N. 12 32 25.2	89.37
0	6 59 4.13	25.388	17 33 21.3	36.06	0	9 1 15.28	25.258	12 23 26.2	90.28
1	7 1 36.50	25.402	17 29 41.2	37.31	1	9 3 46.78	25.241	12 14 21.8	91.19
2	7 4 8.95	25.416	17 25 53.6	38.57	2	9 6 18.17	25.222	12 5 11.9	92.08
3	7 6 41.49	25.429	17 21 58.4	39.82	3	9 8 49.45	25.204	11 55 56.8	92.96
4	7 9 14.10	25.441	17 17 55.8	41.07	4	9 11 20.62	25.185	11 46 36.4	93.83
5	7 11 46.78	25.453	17 13 45.6	42.32	5	9 13 51.67	25.166	11 37 10.8	94.68
6	7 14 19.53	25.463	17 9 28.0	43.56	6	9 16 22.61	25.147	11 27 40.2	95.52
7	7 16 52.34	25.473	17 5 2.9	44.80	7	9 18 53.43	25.127	11 18 4.6	96.34
8	7 19 25.21	25.483	17 0 30.4	46.04	8	9 21 24.13	25.106	11 8 24.1	97.15
9	7 21 58.13	25.491	16 55 50.4	47.28	9	9 23 54.70	25.085	10 58 38.8	97.95
10	7 24 31.10	25.498	16 51 3.0	48.51	10	9 26 25.15	25.064	10 48 48.7	98.74
11	7 27 4.11	25.505	16 46 8.3	49.73	11	9 28 55.47	25.043	10 38 53.9	99.51
12	7 29 37.16	25.511	16 41 6.2	50.97	12	9 31 25.67	25.022	10 28 54.6	100.26
13	7 32 10.24	25.516	16 35 56.7	52.19	13	9 33 55.73	24.999	10 18 50.8	101.00
14	7 34 43.35	25.521	16 30 39.9	53.41	14	9 36 25.66	24.978	10 8 42.6	101.73
15	7 37 16.49	25.524	16 19 44.5	54.62	15	9 38 55.46	24.955	9 58 30.1	102.44
16	7 39 49.64	25.527	16 14 6.0	55.82	16	9 41 25.12	24.932	9 48 13.3	103.14
17	7 42 22.81	25.529	16 8 20.2	57.02	17	9 43 54.64	24.909	9 37 52.4	103.82
18	7 44 55.99	25.530	16 2 27.3	58.23	18	9 46 24.03	24.887	9 27 27.5	104.48
19	7 47 29.17	25.531	15 56 27.3	59.41	19	9 48 53.28	24.863	9 16 58.6	105.14
20	7 50 2.36	25.531	15 50 20.2	60.59	20	9 51 22.39	24.839	9 6 25.8	105.78
21	7 52 35.54	25.529	15 44 6.0	61.78	21	9 53 51.35	24.816	8 55 49.3	106.39
22	7 55 8.71	25.528	15 37 44.8	62.95	22	9 56 20.18	24.793	N. 8 45 9.1	107.00
23	7 57 41.87	25.526			23	9 58 48.86	24.768		
<b>FRIDAY 10.</b>					<b>SUNDAY 12.</b>				
	h m s	s	N. 15 37 44.8	64.11		h m s	s	N. 8 34 25.3	107.60
0	8 0 15.02	25.523	15 31 16.7	65.27	0	10 1 17.40	24.744	8 23 37.9	108.18
1	8 2 48.14	25.518	15 24 41.6	66.42	1	10 3 45.79	24.719	8 12 47.2	108.73
2	8 5 21.24	25.514	15 17 59.7	67.56	2	10 6 14.03	24.695	8 1 53.1	109.28
3	8 7 54.31	25.509	15 11 10.9	68.70	3	10 8 42.13	24.672	7 50 55.9	109.80
4	8 10 27.35	25.503	14 57 13.1	69.82	4	10 11 10.09	24.647	7 39 55.5	110.32
5	8 13 0.35	25.497	14 50 4.1	70.93	5	10 13 37.89	24.622	7 28 52.1	110.82
6	8 15 33.31	25.489	14 42 48.5	72.05	6	10 16 5.55	24.598	7 17 45.7	111.30
7	8 18 6.22	25.481	14 35 26.3	73.15	7	10 18 33.06	24.573	7 6 36.5	111.77
8	8 20 39.08	25.473	14 27 57.6	74.24	8	10 21 0.43	24.548	6 55 24.5	112.22
9	8 23 11.89	25.464	14 20 22.5	75.32	9	10 23 27.64	24.523	6 44 9.9	112.65
10	8 25 44.65	25.454	14 12 40.9	76.39	10	10 25 54.70	24.498	6 32 52.7	113.08
11	8 28 17.34	25.443	13 56 58.7	77.47	11	10 28 21.62	24.474	6 21 33.0	113.48
12	8 30 49.97	25.433	13 48 58.3	78.52	12	10 30 48.39	24.448	6 10 11.0	113.86
13	8 33 22.53	25.421	13 40 51.7	79.55	13	10 33 15.00	24.423	5 58 46.7	114.23
14	8 35 55.02	25.408	13 32 39.0	80.58	14	10 35 41.47	24.399	5 47 20.3	114.58
15	8 38 27.43	25.396	13 24 20.3	81.61	15	10 38 7.79	24.374	5 35 51.7	114.93
16	8 40 59.77	25.383	13 15 55.6	82.62	16	10 40 33.96	24.349	5 24 21.1	115.25
17	8 43 32.02	25.368	13 7 25.1	83.62	17	10 42 59.98	24.324	5 12 48.7	115.55
18	8 46 4.19	25.355	12 58 48.7	84.60	18	10 45 25.85	24.300	5 1 14.5	115.85
19	8 48 36.28	25.340	12 50 6.5	85.58	19	10 47 51.58	24.276	4 49 38.5	116.13
20	8 51 8.27	25.324	12 41 18.7	86.55	20	10 50 17.16	24.251	4 38 1.0	116.38
21	8 53 40.17	25.309	12 32 25.2	87.50	21	10 52 42.59	24.226	4 26 21.9	116.63
22	8 56 11.98	25.293		88.44	22	10 55 7.87	24.202	4 14 41.4	116.86
23	8 58 43.68	25.275			23	10 57 33.01	24.178		
24	9 1 15.28	25.258			24	10 59 58.00	24.153	N. 4 2 59.6	117.07

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10m.	Declination.	Var. in 10m.	Hour.	Right Ascension.	Var. in 10m.	Declination.	Var. in 10m.
<b>MONDAY 13.</b>					<b>WEDNESDAY 15.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	10 59 58.00	24.153	N. 4 2 59.6	117.07	0	12 53 26.34	23.208	S. 5 15 3.4	110.13
1	11 2 22.85	24.130	3 51 16.6	117.27	1	12 55 45.54	23.193	5 26 2.8	109.66
2	11 4 47.56	24.106	3 39 32.4	117.45	2	12 58 4.66	23.180	5 36 59.3	109.18
3	11 7 12.12	24.082	3 27 47.2	117.62	3	13 0 23.70	23.166	5 47 53.0	108.71
4	11 9 36.54	24.058	3 16 1.0	117.77	4	13 2 42.65	23.152	5 58 43.8	108.21
5	11 12 0.82	24.034	3 4 14.0	117.90	5	13 5 1.52	23.139	6 9 31.5	107.70
6	11 14 24.95	24.011	2 52 26.2	118.03	6	13 7 20.32	23.126	6 20 16.2	107.19
7	11 16 48.95	23.988	2 40 37.7	118.13	7	13 9 39.03	23.113	6 30 57.8	106.67
8	11 19 12.80	23.964	2 28 48.7	118.21	8	13 11 57.67	23.100	6 41 36.2	106.13
9	11 21 36.52	23.942	2 16 59.2	118.29	9	13 14 16.23	23.088	6 52 11.3	105.58
10	11 24 0.10	23.918	2 5 9.2	118.35	10	13 16 34.72	23.076	7 2 43.2	105.03
11	11 26 23.54	23.896	1 53 19.0	118.38	11	13 18 53.14	23.063	7 13 11.6	104.46
12	11 28 46.85	23.873	1 41 28.6	118.41	12	13 21 11.48	23.052	7 23 36.7	103.88
13	11 31 10.02	23.851	1 29 38.1	118.43	13	13 23 29.76	23.040	7 33 58.2	103.29
14	11 33 33.06	23.829	1 17 47.5	118.43	14	13 25 47.96	23.028	7 44 16.2	102.71
15	11 35 55.97	23.808	1 5 57.0	118.41	15	13 28 6.09	23.017	7 54 30.7	102.10
16	11 38 18.75	23.786	0 54 6.6	118.38	16	13 30 24.16	23.006	8 4 41.4	101.48
17	11 40 41.40	23.764	0 42 16.5	118.33	17	13 32 42.16	22.994	8 14 48.5	100.87
18	11 43 3.92	23.743	0 30 26.7	118.27	18	13 35 0.09	22.983	8 24 51.8	100.23
19	11 45 26.31	23.722	0 18 37.3	118.19	19	13 37 17.96	22.973	8 34 51.3	99.60
20	11 47 48.58	23.701	N. 0 6 48.4	118.10	20	13 39 35.77	22.963	8 44 47.0	98.95
21	11 50 10.72	23.680	S. 0 4 59.9	117.99	21	13 41 53.51	22.953	8 54 38.7	98.28
22	11 52 32.74	23.659	0 16 47.5	117.87	22	13 44 11.20	22.943	9 4 26.4	97.62
23	11 54 54.63	23.639	S. 0 28 34.3	117.74	23	13 46 28.82	22.932	S. 9 14 10.1	96.95
<b>TUESDAY 14.</b>					<b>THURSDAY 16.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	11 57 16.41	23.619	S. 0 40 20.4	117.60	0	13 48 46.38	22.923	S. 9 23 49.8	96.27
1	11 59 38.06	23.599	0 52 5.5	117.43	1	13 51 3.89	22.913	9 33 25.3	95.58
2	12 1 59.60	23.580	1 3 49.6	117.26	2	13 53 21.34	22.903	9 42 56.7	94.88
3	12 4 21.02	23.561	1 15 32.6	117.07	3	13 55 38.73	22.893	9 52 23.9	94.18
4	12 6 42.33	23.542	1 27 14.4	116.87	4	13 57 56.06	22.884	10 1 46.8	93.46
5	12 9 3.52	23.523	1 38 55.0	116.65	5	14 0 13.34	22.876	10 11 5.4	92.74
6	12 11 24.60	23.504	1 50 34.2	116.42	6	14 2 30.57	22.867	10 20 19.7	92.02
7	12 13 45.57	23.485	2 2 12.0	116.18	7	14 4 47.74	22.858	10 29 29.6	91.28
8	12 16 6.42	23.467	2 13 48.3	115.92	8	14 7 4.86	22.849	10 38 35.1	90.53
9	12 18 27.17	23.449	2 25 23.0	115.65	9	14 9 21.93	22.841	10 47 36.0	89.78
10	12 20 47.81	23.432	2 36 56.1	115.38	10	14 11 38.95	22.832	10 56 32.5	89.03
11	12 23 8.35	23.414	2 48 27.5	115.08	11	14 13 55.91	22.823	11 5 24.4	88.27
12	12 25 28.78	23.397	2 59 57.0	114.76	12	14 16 12.83	22.816	11 14 11.7	87.50
13	12 27 49.11	23.380	3 11 24.6	114.44	13	14 18 29.70	22.807	11 22 54.4	86.73
14	12 30 9.34	23.363	3 22 50.3	114.12	14	14 20 46.51	22.798	11 31 32.4	85.94
15	12 32 29.46	23.346	3 34 14.0	113.77	15	14 23 3.28	22.791	11 40 5.7	85.15
16	12 34 49.49	23.330	3 45 35.5	113.41	16	14 25 20.00	22.783	11 48 34.2	84.36
17	12 37 9.42	23.314	3 56 54.9	113.04	17	14 27 36.67	22.775	11 56 58.0	83.56
18	12 39 29.26	23.298	4 8 12.0	112.66	18	14 29 53.30	22.768	12 5 16.9	82.75
19	12 41 49.00	23.283	4 19 26.8	112.27	19	14 32 9.88	22.760	12 13 31.0	81.94
20	12 44 8.65	23.267	4 30 39.2	111.86	20	14 34 26.42	22.753	12 21 40.2	81.12
21	12 46 28.20	23.252	4 41 49.1	111.44	21	14 36 42.91	22.744	12 29 44.4	80.29
22	12 48 47.67	23.238	4 52 56.5	111.02	22	14 38 59.35	22.737	12 37 43.7	79.48
23	12 51 7.05	23.223	5 4 1.3	110.58	23	14 41 15.75	22.729	12 45 38.1	78.64
24	12 53 26.34	23.208	S. 5 15 3.4	110.13	24	14 43 32.10	22.722	S. 12 53 27.4	77.79

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>FRIDAY 17.</b>					<b>SUNDAY 19.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	14 43 32.10	22.722	S. 12 53 27.4	77.71	0	16 31 41.05	22.309	S. 17 22 54.5	33.49
1	14 45 48.41	22.714	13 1 11.6	76.95	1	16 33 54.87	22.297	17 26 12.6	32.53
2	14 48 4.67	22.707	13 8 50.8	76.11	2	16 36 8.61	22.285	17 29 24.9	31.57
3	14 50 20.89	22.699	13 16 24.9	75.25	3	16 38 22.29	22.274	17 32 31.4	30.59
4	14 52 37.06	22.692	13 23 53.8	74.38	4	16 40 35.90	22.262	17 35 32.0	29.63
5	14 54 53.19	22.685	13 31 17.5	73.53	5	16 42 49.43	22.249	17 38 26.9	28.67
6	14 57 9.28	22.678	13 38 36.1	72.66	6	16 45 2.89	22.238	17 41 16.0	27.70
7	14 59 25.32	22.669	13 45 49.4	71.78	7	16 47 16.28	22.225	17 43 59.3	26.73
8	15 1 14.31	22.662	13 52 57.5	70.91	8	16 49 29.59	22.212	17 46 36.8	25.77
9	15 3 57.26	22.655	14 0 0.3	70.03	9	16 51 42.82	22.198	17 49 8.5	24.80
10	15 6 13.17	22.648	14 6 57.8	69.14	10	16 53 55.97	22.186	17 51 34.4	23.84
11	15 8 29.03	22.640	14 13 50.0	68.25	11	16 56 9.05	22.173	17 53 54.6	22.88
12	15 10 44.85	22.633	14 20 36.8	67.36	12	16 58 22.04	22.159	17 56 8.9	21.91
13	15 13 0.62	22.624	14 27 18.3	66.47	13	17 0 34.96	22.146	17 58 17.5	20.95
14	15 15 16.34	22.617	14 33 54.4	65.56	14	17 2 47.79	22.131	18 0 20.3	19.98
15	15 17 32.02	22.610	14 40 25.0	64.65	15	17 5 0.53	22.117	18 2 17.3	19.03
16	15 19 47.66	22.603	14 46 50.2	63.75	16	17 7 13.19	22.103	18 4 8.6	18.07
17	15 22 3.25	22.594	14 53 10.0	62.84	17	17 9 25.77	22.089	18 5 54.1	17.10
18	15 24 18.79	22.587	14 59 24.3	61.93	18	17 11 38.26	22.074	18 7 33.8	16.14
19	15 26 34.29	22.579	15 5 33.1	61.01	19	17 13 50.66	22.058	18 9 7.8	15.19
20	15 28 49.74	22.571	15 11 36.4	60.09	20	17 16 2.96	22.043	18 10 36.1	14.23
21	15 31 5.14	22.563	15 17 34.2	59.17	21	17 18 15.18	22.029	18 11 58.6	13.28
22	15 33 20.50	22.556	15 23 26.4	58.23	22	17 20 27.31	22.013	18 13 15.4	12.33
23	15 35 35.81	22.548	S. 15 29 13.0	57.31	23	17 22 39.34	21.998	S. 18 14 26.5	11.38
<b>SATURDAY 18.</b>					<b>MONDAY 20.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	15 37 51.07	22.539	S. 15 34 54.1	56.38	0	17 24 51.28	21.982	S. 18 15 31.9	10.43
1	15 40 6.28	22.531	15 40 29.6	55.44	1	17 27 3.12	21.965	18 16 31.6	9.48
2	15 42 21.44	22.523	15 45 59.4	54.51	2	17 29 14.86	21.949	18 17 25.6	8.53
3	15 44 36.55	22.514	15 51 23.7	53.58	3	17 31 26.51	21.933	18 18 13.9	7.58
4	15 46 51.61	22.506	15 56 42.3	52.63	4	17 33 38.06	21.917	18 18 56.6	6.64
5	15 49 6.62	22.498	16 1 55.2	51.68	5	17 35 49.51	21.899	18 19 33.6	5.69
6	15 51 21.58	22.488	16 7 2.5	50.75	6	17 38 0.85	21.883	18 20 4.9	4.75
7	15 53 36.48	22.479	16 12 4.2	49.80	7	17 40 12.10	21.866	18 20 30.6	3.82
8	15 55 51.33	22.471	16 17 0.1	48.84	8	17 42 23.24	21.848	18 20 50.7	2.88
9	15 58 6.13	22.462	16 21 50.3	47.89	9	17 44 34.27	21.830	18 21 5.2	1.95
10	16 0 20.87	22.453	16 26 34.8	46.94	10	17 46 45.20	21.813	18 21 14.1	1.02
11	16 2 35.56	22.443	16 31 13.6	45.99	11	17 48 56.02	21.794	18 21 17.4	0.09
12	16 4 50.19	22.434	16 35 46.7	45.04	12	17 51 6.73	21.776	18 21 15.2	0.83
13	16 7 4.77	22.424	16 40 14.1	44.08	13	17 53 17.33	21.758	18 21 7.4	1.77
14	16 9 19.28	22.414	16 44 35.7	43.12	14	17 55 27.82	21.739	18 20 54.0	2.69
15	16 11 33.74	22.405	16 48 51.5	42.16	15	17 57 38.20	21.720	18 20 35.1	3.60
16	16 13 48.14	22.394	16 53 1.6	41.21	16	17 59 48.46	21.701	18 20 10.8	4.52
17	16 16 2.47	22.384	16 57 6.0	40.24	17	18 1 58.61	21.682	18 19 40.9	5.43
18	16 18 16.75	22.374	17 1 4.5	39.28	18	18 4 8.64	21.663	18 19 5.6	6.34
19	16 20 30.96	22.363	17 4 57.3	38.32	19	18 6 18.56	21.643	18 18 24.8	7.26
20	16 22 45.11	22.353	17 8 44.3	37.36	20	18 8 28.36	21.624	18 17 38.5	8.16
21	16 24 59.19	22.342	17 12 25.6	36.39	21	18 10 38.05	21.604	18 16 46.9	9.06
22	16 27 13.21	22.331	17 16 1.0	35.43	22	18 12 47.61	21.583	18 15 49.8	9.97
23	16 29 27.16	22.320	17 19 30.7	34.46	23	18 14 57.05	21.563	18 14 47.3	10.86
24	16 31 41.05	22.309	S. 17 22 54.5	33.49	24	18 17 6.37	21.543	S. 18 13 39.5	11.76

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>TUESDAY 21.</b>					<b>THURSDAY 23.</b>				
	h m s	s	S. 18° 13' 39".5	11".76		h m s	s	S. 15° 41' 16".2	50".13
0	18 17 6.37	21.543	18 12 26.2	12.65	0	19 57 55.78	20.437	15 36 13.4	50.80
1	18 19 15.57	21.523	18 11 7.7	13.53	1	19 59 58.33	20.413	15 31 6.6	51.49
2	18 21 24.64	21.502	18 9 43.8	14.42	2	20 2 0.73	20.388	15 25 55.6	52.17
3	18 23 33.59	21.481	18 8 14.7	15.29	3	20 4 2.98	20.363	15 20 40.5	52.84
4	18 25 42.41	21.460	18 6 40.3	16.18	4	20 6 5.09	20.340	15 15 21.5	53.51
5	18 27 51.11	21.439	18 5 0.6	17.06	5	20 8 7.06	20.316	15 9 58.4	54.18
6	18 29 59.68	21.418	18 3 15.6	17.93	6	20 10 8.88	20.292	15 4 31.4	54.83
7	18 32 8.12	21.397	18 1 25.5	18.78	7	20 12 10.56	20.268	14 59 0.4	55.49
8	18 34 16.44	21.375	17 59 30.2	19.65	8	20 14 12.10	20.244	14 53 25.5	56.13
9	18 36 24.62	21.353	17 57 29.7	20.52	9	20 16 13.49	20.220	14 47 46.8	56.77
10	18 38 32.67	21.331	17 55 24.0	21.38	10	20 18 14.74	20.197	14 42 4.3	57.41
11	18 40 40.59	21.309	17 53 13.2	22.23	11	20 20 15.85	20.173	14 36 17.9	58.05
12	18 42 48.38	21.288	17 50 57.3	23.08	12	20 22 16.81	20.149	14 30 27.7	58.68
13	18 44 56.04	21.265	17 48 36.3	23.92	13	20 24 17.64	20.126	14 24 33.8	59.29
14	18 47 3.56	21.242	17 46 10.3	24.75	14	20 26 18.32	20.103	14 18 36.2	59.91
15	18 49 10.94	21.220	17 43 39.3	25.59	15	20 28 18.87	20.079	14 12 34.9	60.52
16	18 51 18.20	21.198	17 41 3.2	26.43	16	20 30 19.27	20.056	14 6 30.0	61.12
17	18 53 25.31	21.174	17 38 22.1	27.26	17	20 32 19.54	20.033	14 0 21.5	61.72
18	18 55 32.29	21.152	17 35 36.1	28.08	18	20 34 19.66	20.009	13 54 9.4	62.32
19	18 57 39.13	21.128	17 32 45.1	28.91	19	20 36 19.65	19.987	13 47 53.7	62.91
20	18 59 45.83	21.106	17 29 49.2	29.73	20	20 38 19.50	19.963	13 41 34.5	63.49
21	19 1 52.40	21.083	17 26 48.4	30.53	21	20 40 19.21	19.941	13 35 11.8	64.07
22	19 3 58.82	21.059	17 23 42.8	31.34	22	20 42 18.79	19.918	13 28 45.7	64.64
23	19 6 5.11	21.036			23	20 44 18.23	19.896		
<b>WEDNESDAY 22.</b>					<b>FRIDAY 24.</b>				
	h m s	s	S. 17° 20' 32".3	32.16		h m s	s	S. 13° 22' 16".1	65.21
0	19 8 11.25	21.013	17 17 16.9	32.96	0	20 46 17.54	19.874	13 15 43.2	65.77
1	19 10 17.26	20.989	17 13 56.8	33.75	1	20 48 16.72	19.852	13 9 6.9	66.33
2	19 12 23.12	20.965	17 10 31.9	34.54	2	20 50 15.76	19.829	13 2 27.3	66.88
3	19 14 28.84	20.942	17 7 2.3	35.33	3	20 52 14.67	19.807	12 55 44.4	67.43
4	19 16 34.42	20.918	17 3 28.0	36.12	4	20 54 13.44	19.785	12 48 58.2	67.97
5	19 18 39.86	20.895	16 59 48.9	36.90	5	20 56 12.09	19.763	12 42 8.8	68.49
6	19 20 45.16	20.871	16 56 5.2	37.67	6	20 58 10.60	19.742	12 35 16.3	69.02
7	19 22 50.31	20.847	16 52 16.9	38.43	7	21 0 8.99	19.721	12 28 20.6	69.55
8	19 24 55.32	20.823	16 48 24.0	39.20	8	21 2 7.25	19.699	12 21 21.7	70.07
9	19 27 0.19	20.799	16 44 26.5	39.97	9	21 4 5.38	19.678	12 14 19.8	70.58
10	19 29 4.91	20.774	16 40 24.4	40.73	10	21 6 3.39	19.658	12 7 14.8	71.08
11	19 31 9.48	20.750	16 36 17.8	41.48	11	21 8 1.27	19.637	12 0 6.8	71.58
12	19 33 13.91	20.727	16 32 6.7	42.22	12	21 9 59.03	19.616	11 52 55.8	72.08
13	19 35 18.20	20.703	16 27 51.2	42.96	13	21 11 56.66	19.595	11 45 41.9	72.57
14	19 37 22.35	20.679	16 23 31.2	43.70	14	21 13 54.17	19.575	11 38 25.0	73.06
15	19 39 26.35	20.654	16 19 6.8	44.43	15	21 15 51.56	19.555	11 31 5.2	73.53
16	19 41 30.20	20.629	16 10 4.9	45.16	16	21 17 48.83	19.536	11 23 42.6	74.00
17	19 43 33.90	20.605	16 5 27.4	46.61	17	21 19 45.99	19.516	11 16 17.2	74.47
18	19 45 37.46	20.582	16 0 45.6	47.32	18	21 21 43.02	19.496	11 8 49.0	74.93
19	19 47 40.88	20.558	15 55 59.6	48.03	19	21 23 39.94	19.477	11 1 18.0	75.39
20	19 49 44.15	20.533	15 51 9.3	48.73	20	21 25 36.74	19.458	10 53 44.3	75.84
21	19 51 47.28	20.509	15 46 14.9	49.43	21	21 27 33.43	19.438	10 46 7.9	76.28
22	19 53 50.26	20.484			22	21 29 30.00	19.419	10 38 28.9	76.72
23	19 55 53.09	20.460			23	21 31 26.46	19.402		
24	19 57 55.78	20.437	S. 15° 41' 16".2	50".13	24	21 33 22.82	19.383	S. 10° 30' 47".3	77.15

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SATURDAY 25.</b>					<b>MONDAY 27.</b>				
	h m s	s	S. 10° 30' 47".	77.15		h m s	s	S. 3° 41' 23".	91.22
0	21 33 22.82	19.383	10 23 3.1	77.58	0	23 4 47.48	18.813	3 32 16.0	91.37
1	21 35 19.06	19.365	10 15 16.3	78.01	1	23 6 40.34	18.808	3 23 7.4	91.51
2	21 37 15.20	19.348	10 7 27.0	78.43	2	23 8 33.18	18.805	3 13 57.9	91.66
3	21 39 11.23	19.330	9 59 35.2	78.83	3	23 10 26.00	18.802	3 4 47.5	91.79
4	21 41 7.16	19.313	9 51 41.0	79.23	4	23 12 18.80	18.798	2 55 36.4	91.92
5	21 43 2.98	19.295	9 43 44.4	79.63	5	23 14 11.57	18.794	2 46 24.5	92.04
6	21 44 58.70	19.278	9 35 45.4	80.03	6	23 16 4.33	18.792	2 37 11.9	92.16
7	21 46 54.32	19.262	9 27 44.0	80.42	7	23 17 57.07	18.789	2 27 58.6	92.28
8	21 48 49.84	19.245	9 19 40.4	80.79	8	23 19 49.80	18.788	2 18 44.6	92.38
9	21 50 45.26	19.228	9 11 34.5	81.18	9	23 21 42.52	18.786	2 9 30.0	92.48
10	21 52 40.58	19.213	9 3 26.3	81.55	10	23 23 35.23	18.784	2 0 14.9	92.57
11	21 54 35.81	19.198	8 55 15.9	81.91	11	23 25 27.93	18.783	1 50 59.2	92.66
12	21 56 30.95	19.183	8 47 3.4	82.27	12	23 27 20.63	18.783	1 41 43.0	92.74
13	21 58 26.00	19.167	8 38 48.7	82.63	13	23 29 13.32	18.782	1 32 26.3	92.82
14	22 0 20.95	19.152	8 30 31.9	82.97	14	23 31 6.01	18.782	1 23 9.2	92.89
15	22 2 15.82	19.137	8 22 13.1	83.31	15	23 32 58.70	18.783	1 13 51.6	92.96
16	22 4 10.59	19.122	8 13 52.2	83.65	16	23 34 51.40	18.783	1 4 33.7	93.01
17	22 6 5.28	19.108	8 5 29.3	83.98	17	23 36 44.10	18.784	0 55 15.5	93.07
18	22 7 59.89	19.095	7 57 4.4	84.30	18	23 38 36.81	18.786	0 45 56.9	93.12
19	22 9 54.42	19.081	7 48 37.7	84.62	19	23 40 29.53	18.788	0 36 38.1	93.16
20	22 11 48.86	19.068	7 40 9.0	84.94	20	23 42 22.26	18.790	0 27 19.0	93.20
21	22 13 43.23	19.055	7 31 38.4	85.24	21	23 44 15.01	18.793	0 17 59.7	93.23
22	22 15 37.52	19.042	7 23 6.1	85.54	22	23 46 7.77	18.795	0 8 40.3	93.24
23	22 17 31.73	19.028			23	23 48 0.55	18.798		
<b>SUNDAY 26.</b>					<b>TUESDAY 28.</b>				
	h m s	s	S. 7° 14' 31.9	85.84		h m s	s	N. 0° 0' 39.2	93.25
0	22 19 25.86	19.017	7 5 56.0	86.13	0	23 49 53.35	18.802	0 9 58.9	93.28
1	22 21 19.93	19.005	6 57 18.4	86.41	1	23 51 46.17	18.806	0 19 18.6	93.28
2	22 23 13.92	18.993	6 48 39.1	86.69	2	23 53 39.02	18.810	0 28 38.3	93.28
3	22 25 7.84	18.982	6 39 58.1	86.97	3	23 55 31.89	18.814	0 37 58.0	93.28
4	22 27 1.70	18.971	6 31 15.5	87.23	4	23 57 24.79	18.820	0 47 17.7	93.28
5	22 28 55.49	18.960	6 22 31.3	87.50	5	23 59 17.73	18.826	0 56 37.3	93.26
6	22 30 49.22	18.950	6 13 45.5	87.75	6	0 1 10.70	18.831	1 5 56.8	93.23
7	22 32 42.89	18.939	6 4 58.3	88.00	7	0 3 3.70	18.837	1 15 16.1	93.21
8	22 34 36.49	18.929	5 56 9.5	88.25	8	0 4 56.74	18.844	1 24 35.3	93.18
9	22 36 30.04	18.920	5 47 19.3	88.49	9	0 6 49.83	18.851	1 33 54.2	93.13
10	22 38 23.53	18.910	5 38 27.6	88.72	10	0 8 42.95	18.858	1 43 12.9	93.09
11	22 40 16.96	18.901	5 29 34.6	88.94	11	0 10 36.12	18.866	1 52 31.3	93.03
12	22 42 10.34	18.893	5 20 40.3	89.17	12	0 12 29.34	18.874	2 1 49.3	92.98
13	22 44 3.67	18.884	5 11 44.6	89.38	13	0 14 22.61	18.883	2 11 7.0	92.92
14	22 45 56.95	18.877	5 2 47.7	89.58	14	0 16 15.93	18.891	2 20 24.3	92.85
15	22 47 50.19	18.869	4 53 49.6	89.79	15	0 18 9.30	18.900	2 29 41.2	92.78
16	22 49 43.38	18.861	4 44 50.2	89.99	16	0 20 2.73	18.910	2 38 57.6	92.69
17	22 51 36.52	18.853	4 35 49.7	90.18	17	0 21 56.22	18.920	2 48 13.5	92.60
18	22 53 29.62	18.847	4 26 48.0	90.37	18	0 23 49.77	18.930	2 57 28.8	92.51
19	22 55 22.69	18.841	4 17 45.2	90.55	19	0 25 43.38	18.941	3 6 43.6	92.42
20	22 57 15.71	18.834	4 8 41.4	90.73	20	0 27 37.06	18.952	3 15 57.8	92.31
21	22 59 8.70	18.829	3 59 36.5	90.90	21	0 29 30.80	18.963	3 25 11.3	92.19
22	23 1 1.66	18.823	3 50 30.6	91.06	22	0 31 24.62	18.975	3 34 24.1	92.08
23	23 2 54.58	18.818			23	0 33 18.50	18.987		
24	23 4 47.48	18.813	S. 3° 41' 23.8	91.22	24	0 35 12.46	19.000	N. 3° 43' 36.2	91.96

PHASES OF THE MOON.

		h m	
Feb.	4	⋔ First Quarter	16 52.3
	11	( ) Full Moon	13 17.5
	18	⋔ Last Quarter	6 18.1
	26	● New Moon	6 47.7

		h	
Feb.	11	⋔ Perigee	23.0
	26	⋔ Apogee	2.8

## AT APPARENT NOON.

Date.	THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var. in 1 hour.
	Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
	h m s	s	° ' "	"	m s	m s	s
Wed.	1 22 46 39.99	9.378	3. 7 46 6.5	56.84	1 5.42	12 36.18	0.477
Thur.	2 22 50 24.79	9.356	7 23 18.9	57.11	1 5.35	12 24.46	0.499
Frid.	3 22 54 9.08	9.335	7 0 25.1	57.37	1 5.28	12 12.23	0.520
Sat.	4 22 57 52.88	9.315	6 37 25.4	57.60	1 5.21	11 59.51	0.540
Sun.	5 23 1 36.19	9.295	6 14 20.2	57.82	1 5.14	11 46.31	0.560
Mon.	6 23 5 19.04	9.276	5 51 10.0	58.02	1 5.08	11 32.65	0.579
Tues.	7 23 9 1.45	9.258	5 27 55.1	58.21	1 5.02	11 18.54	0.597
Wed.	8 23 12 43.43	9.241	5 4 35.9	58.38	1 4.96	11 4.01	0.614
Thur.	9 23 16 25.01	9.225	4 41 12.9	58.53	1 4.91	10 49.08	0.630
Frid.	10 23 20 6.21	9.209	4 17 46.3	58.68	1 4.85	10 33.77	0.646
Sat.	11 23 23 47.04	9.194	3 54 16.5	58.80	1 4.80	10 18.09	0.660
Sun.	12 23 27 27.54	9.181	3 30 43.9	58.91	1 4.76	10 2.08	0.674
Mon.	13 23 31 7.73	9.169	3 7 8.9	59.00	1 4.72	9 45.76	0.686
Tues.	14 23 34 47.64	9.157	2 43 31.8	59.08	1 4.67	9 29.16	0.697
Wed.	15 23 38 27.28	9.147	2 19 53.0	59.15	1 4.64	9 12.30	0.707
Thur.	16 23 42 6.69	9.138	1 56 12.7	59.20	1 4.60	8 55.20	0.717
Frid.	17 23 45 45.89	9.129	1 32 31.3	59.24	1 4.57	8 37.90	0.725
Sat.	18 23 49 24.90	9.122	1 8 49.3	59.26	1 4.54	8 20.40	0.732
Sun.	19 23 53 3.74	9.115	0 45 7.0	59.26	1 4.52	8 2.74	0.739
Mon.	20 23 56 42.44	9.110	3. 0 21 24.6	59.26	1 4.49	7 44.94	0.744
Tues.	21 0 0 21.02	9.105	N. 0 2 17.3	59.23	1 4.47	7 27.01	0.749
Wed.	22 0 3 59.49	9.101	0 25 58.5	59.19	1 4.45	7 8.98	0.753
Thur.	23 0 7 37.87	9.098	0 49 38.5	59.14	1 4.44	6 50.87	0.756
Frid.	24 0 11 16.19	9.096	1 13 17.1	59.07	1 4.43	6 32.68	0.759
Sat.	25 0 14 54.46	9.094	1 36 53.8	58.98	1 4.42	6 14.45	0.760
Sun.	26 0 18 32.70	9.093	2 0 28.2	58.88	1 4.42	5 56.19	0.761
Mon.	27 0 22 10.92	9.092	2 24 0.0	58.76	1 4.42	5 37.91	0.762
Tues.	28 0 25 49.14	9.093	2 47 28.9	58.64	1 4.42	5 19.63	0.761
Wed.	29 0 29 27.39	9.095	3 10 54.5	58.49	1 4.42	5 1.38	0.760
Thur.	30 0 33 5.68	9.096	3 34 16.3	58.33	1 4.43	4 43.16	0.758
Frid.	31 0 36 44.02	9.099	3 57 34.1	58.15	1 4.44	4 25.00	0.755
Sat.	32 0 40 22.42	9.102	N. 4 20 47.5	57.96	1 4.45	4 6.90	0.752

\* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.



## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be added to Apparent Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
		h m s	S. ° ' "	' "	m s	h m s
Wed.	1	22 46 38.02	S. 7 46 18.4	16 9.79	12 36.28	22 34 1.74
Thur.	2	22 50 22.86	7 23 30.7	16 9.56	12 24.57	22 37 58.29
Frid.	3	22 54 7.18	7 0 36.7	16 9.32	12 12.34	22 41 54.84
Sat.	4	22 57 51.01	6 37 36.9	16 9.08	11 59.62	22 45 51.40
Sun.	5	23 1 34.37	6 14 31.5	16 8.83	11 46.42	22 49 47.95
Mon.	6	23 5 17.26	5 51 21.1	16 8.59	11 32.76	22 53 44.50
Tues.	7	23 8 59.71	5 28 6.1	16 8.34	11 18.65	22 57 41.05
Wed.	8	23 12 41.73	5 4 46.7	16 8.09	11 4.13	23 1 37.60
Thur.	9	23 16 23.35	4 41 23.4	16 7.84	10 49.19	23 5 34.16
Frid.	10	23 20 4.59	4 17 56.6	16 7.59	10 33.88	23 9 30.71
Sat.	11	23 23 45.47	3 54 26.6	16 7.33	10 18.21	23 13 27.26
Sun.	12	23 27 26.01	3 30 53.8	16 7.08	10 2.20	23 17 23.81
Mon.	13	23 31 6.24	3 7 18.5	16 6.81	9 45.88	23 21 20.36
Tues.	14	23 34 46.19	2 43 41.2	16 6.55	9 29.27	23 25 16.91
Wed.	15	23 38 25.88	2 20 2.0	16 6.28	9 12.41	23 29 13.47
Thur.	16	23 42 5.33	1 56 21.5	16 6.01	8 55.31	23 33 10.02
Frid.	17	23 45 44.57	1 32 39.9	16 5.74	8 38.00	23 37 6.57
Sat.	18	23 49 23.63	1 8 57.6	16 5.46	8 20.50	23 41 3.12
Sun.	19	23 53 2.52	0 45 14.9	16 5.18	8 2.84	23 44 59.67
Mon.	20	23 56 41.26	S. 0 21 32.3	16 4.91	7 45.04	23 48 56.22
Tues.	21	0 0 19.88	N. 0 2 10.0	16 4.63	7 27.11	23 52 52.78
Wed.	22	0 3 58.40	0 25 51.4	16 4.35	7 9.07	23 56 49.33
Thur.	23	0 7 36.83	0 49 31.8	16 4.07	6 50.95	0 0 45.88
Frid.	24	0 11 15.20	1 13 10.6	16 3.79	6 32.76	0 4 42.43
Sat.	25	0 14 53.51	1 36 47.6	16 3.51	6 14.53	0 8 38.98
Sun.	26	0 18 31.79	2 0 22.4	16 3.23	5 56.26	0 12 35.54
Mon.	27	0 22 10.06	2 23 54.5	16 2.95	5 37.98	0 16 32.09
Tues.	28	0 25 48.34	2 47 23.7	16 2.68	5 19.70	0 20 28.64
Wed.	29	0 29 26.63	3 10 49.6	16 2.40	5 1.44	0 24 25.19
Thur.	30	0 33 4.96	3 34 11.7	16 2.13	4 43.22	0 28 21.74
Frid.	31	0 36 43.35	3 57 29.8	16 1.85	4 25.05	0 32 18.29
Sat.	32	0 40 21.80	N. 4 20 43.5	16 1.58	4 6.95	0 36 14.85

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
				<sup>h</sup> <sup>m</sup> <sup>s</sup>				
1	340° 7' 55".5	S. 0°.01	9.9961257	1 25 44.18	14 49.05	14 51.38	54 17.25	54 25.80
2	341 8 7.5	0.14	.9962322	1 21 48.27	14 54.15	14 57.36	54 35.93	54 47.69
3	342 8 17.5	0.26	.9963393	1 17 52.36	15 1.04	15 5.21	55 1.17	55 16.44
4	343 8 25.5	0.38	9.9964472	1 13 56.46	15 9.87	15 15.02	55 33.51	55 52.40
5	344 8 31.4	0.48	.9965558	1 10 0.55	15 20.65	15 26.75	56 13.04	56 35.40
6	345 8 35.2	0.55	.9966652	1 6 4.65	15 33.28	15 40.17	56 59.30	57 24.55
7	346 8 36.8	0.59	9.9967755	1 2 8.74	15 47.36	15 54.74	57 50.89	58 17.94
8	347 8 36.2	0.59	.9968868	0 58 12.83	16 2.20	16 9.59	58 45.27	59 12.35
9	348 8 33.4	0.57	.9969993	0 54 16.93	16 16.76	16 23.50	59 38.60	60 3.35
10	349 8 28.5	0.52	9.9971130	0 50 21.02	16 29.66	16 35.03	60 25.89	60 45.55
11	350 8 21.4	0.43	.9972280	0 46 25.12	16 39.41	16 42.66	61 1.60	61 13.53
12	351 8 12.2	0.32	.9973443	0 42 29.21	16 44.65	16 45.29	61 20.82	61 23.14
13	352 8 1.0	0.19	9.9974621	0 38 33.30	16 44.53	16 42.41	61 20.38	61 12.59
14	353 7 47.8	S. 0°.05	.9975813	0 34 37.40	16 38.97	16 34.34	61 0.00	60 43.03
15	354 7 32.7	N. 0°.07	.9977018	0 30 41.49	16 28.67	16 22.13	60 22.26	59 58.31
16	355 7 15.9	0.21	9.9978236	0 26 45.59	16 14.94	16 7.27	59 31.94	59 3.85
17	356 6 57.2	0.33	.9979464	0 22 49.68	15 59.34	15 51.32	58 34.79	58 5.42
18	357 6 36.8	0.42	.9980701	0 18 53.77	15 43.39	15 35.68	57 36.35	57 8.09
19	358 6 14.7	0.48	9.9981946	0 14 57.87	15 28.30	15 21.37	56 41.07	56 15.68
20	359 5 50.9	0.52	.9983196	0 11 1.96	15 14.96	15 9.11	55 52.18	55 30.74
21	0 5 25.4	0.54	.9984450	0 7 6.06	15 3.87	14 59.25	55 11.54	54 54.63
22	1 4 58.0	0.52	9.9985707	{ <sup>0</sup> <sub>23</sub> <sup>3</sup> <sub>59</sub> <sup>10-15</sup> <sub>14-24</sub> }	14 55.27	14 51.92	54 40.03	54 27.75
23	2 4 28.9	0.47	.9986966	23 55 18.34	14 49.18	14 47.03	54 17.72	54 9.87
24	3 3 58.0	0.40	.9988224	23 51 22.43	14 45.46	14 44.42	54 4.09	54 0.31
25	4 3 25.2	0.31	9.9989482	23 47 26.53	14 43.89	14 43.84	53 58.36	53 58.15
26	5 2 50.5	0.19	.9990737	23 43 30.62	14 44.21	14 45.00	53 59.54	54 2.40
27	6 2 13.9	N. 0°.06	.9991990	23 39 34.72	14 46.16	14 47.67	54 6.66	54 12.18
28	7 1 35.3	S. 0°.07	9.9993239	23 35 38.81	14 49.50	14 51.64	54 18.90	54 26.74
29	8 0 54.7	0.20	.9994484	23 31 42.90	14 54.08	14 56.79	54 35.66	54 45.60
30	9 0 12.0	0.33	.9995725	23 27 47.00	14 59.79	15 3.06	54 56.58	55 8.58
31	9 59 27.1	0.44	.9996961	23 23 51.09	15 6.62	15 10.46	55 21.60	55 35.67
32	10 58 40.0	S. 0°.54	9.9998192	23 19 55.19	15 14.59	15 19.01	55 50.81	56 7.02

## MEAN TIME.

THE MOON'S							
Day.	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
	° ' "	° ' "	S. ° ' "	S. ° ' "	d	h m	h m
1	9 33 8.7	15 31 3.9	S. 0 3 52.4	S. 0 36 36.6	2.72	2 4.8	14 26.4
2	21 30 44.4	27 32 31.4	1 9 7.7	1 41 5.6	3.72	2 48.3	15 10.5
3	33 36 59.9	39 44 28.6	2 12 9.7	2 41 59.2	4.72	3 33.2	15 56.4
4	45 55 29.7	52 10 32.6	3 10 13.2	3 36 30.3	5.72	4 20.1	16 44.4
5	58 30 7.5	64 54 43.9	4 0 28.7	4 21 46.7	6.72	5 9.4	17 35.0
6	71 24 49.8	78 0 50.4	4 40 2.3	4 54 53.7	7.72	6 1.2	18 28.0
7	84 43 7.5	91 31 57.5	5 5 59.5	5 12 59.8	8.72	6 55.5	19 23.4
8	98 27 30.6	105 29 48.2	5 15 36.0	5 13 32.7	9.72	7 51.7	20 20.3
9	112 38 43.1	119 53 57.2	5 6 38.0	4 54 45.4	10.72	8 49.1	21 18.0
10	127 15 1.3	134 41 14.9	4 37 54.2	4 16 11.6	11.72	9 46.9	22 15.7
11	142 11 46.7	149 45 35.8	3 49 52.4	3 19 20.4	12.72	10 44.4	23 12.9
12	157 21 33.6	164 58 26.8	2 45 7.3	2 7 52.5	13.72	11 41.3	* *
13	172 34 59.3	180 9 56.5	1 28 21.1	S. 0 47 22.5	14.72	12 37.4	0 9.4
14	187 42 7.2	195 10 26.8	S. 0 5 47.6	N. 0 35 33.3	15.72	13 33.0	1 5.3
15	202 33 59.3	209 51 58.4	N. 1 15 52.7	1 54 27.4	16.72	14 28.1	2 0.6
16	217 3 48.7	224 9 5.9	2 30 40.2	3 4 0.0	17.72	15 22.7	2 55.5
17	231 7 36.3	237 59 15.4	3 34 2.5	4 0 29.4	18.72	16 16.8	3 49.9
18	244 44 8.2	251 22 26.7	4 23 8.4	4 41 51.9	19.72	17 9.9	4 43.5
19	257 54 29.0	264 20 38.1	4 56 36.8	5 7 23.2	20.72	18 1.7	5 36.0
20	270 41 20.9	276 57 6.4	5 14 14.0	5 17 14.1	21.72	18 51.9	6 27.0
21	283 8 25.7	289 15 50.2	5 16 30.0	5 12 9.6	22.72	19 40.2	7 16.3
22	295 19 51.9	301 21 1.9	5 4 21.6	4 53 15.6	23.72	20 26.8	8 3.7
23	307 19 50.8	313 16 47.9	4 39 1.9	4 21 51.6	24.72	21 11.7	8 49.4
24	319 12 20.8	325 6 55.7	4 1 56.6	3 39 29.3	25.72	21 55.3	9 33.6
25	331 0 57.0	336 54 47.3	3 14 43.4	2 47 53.2	26.72	22 38.1	10 16.8
26	342 48 47.6	348 43 17.5	2 19 14.0	1 49 2.4	27.72	23 20.6	10 59.4
27	354 38 34.9	0 34 56.7	1 17 35.8	N. 0 45 12.6	28.72	* *	11 41.9
28	6 32 38.6	12 31 55.6	N. 0 12 12.2	S. 0 21 5.2	29.72	0 3.3	12 24.9
29	18 33 2.1	24 36 12.1	S. 0 54 18.6	1 27 6.6	0.96	0 46.8	13 9.0
30	30 41 39.4	36 49 38.2	1 59 7.2	2 29 58.5	1.96	1 31.5	13 54.5
31	43 0 22.6	49 14 7.6	2 59 18.1	3 26 44.1	2.96	2 18.0	14 42.0
32	55 31 7.8	61 51 39.1	S. 3 51 54.8	S. 4 14 29.0	3.96	3 6.5	15 31.5

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 1.</b>					<b>FRIDAY 3.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	0 35 12.46	19.000	N. 3 43 36.2	91.96	0	2 8 33.88	20.039	N. 10 39 12.2	78.79
1	0 37 6.50	19.013	3 52 47.6	91.83	1	2 10 34.20	20.068	10 47 3.7	78.36
2	0 39 0.61	19.026	4 1 58.1	91.69	2	2 12 34.70	20.099	10 54 52.5	77.92
3	0 40 54.81	19.040	4 11 7.9	91.55	3	2 14 35.39	20.131	11 2 38.7	77.48
4	0 42 49.09	19.054	4 20 16.7	91.40	4	2 16 36.27	20.162	11 10 22.2	77.03
5	0 44 43.46	19.068	4 29 24.7	91.25	5	2 18 37.33	20.193	11 18 3.0	76.57
6	0 46 37.91	19.082	4 38 31.7	91.09	6	2 20 38.59	20.225	11 25 41.0	76.10
7	0 48 32.45	19.098	4 47 37.8	90.93	7	2 22 40.03	20.257	11 33 16.2	75.63
8	0 50 27.09	19.114	4 56 42.9	90.76	8	2 24 41.67	20.290	11 40 48.5	75.15
9	0 52 21.82	19.130	5 5 46.9	90.58	9	2 26 43.51	20.323	11 48 18.0	74.67
10	0 54 16.65	19.146	5 14 49.8	90.39	10	2 28 45.54	20.355	11 55 44.5	74.17
11	0 56 11.57	19.163	5 23 51.6	90.21	11	2 30 47.77	20.389	12 3 8.0	73.67
12	0 58 6.60	19.180	5 32 52.3	90.02	12	2 32 50.21	20.423	12 10 28.5	73.16
13	1 0 1.73	19.198	5 41 51.8	89.81	13	2 34 52.84	20.456	12 17 45.9	72.64
14	1 1 56.97	19.215	5 50 50.0	89.60	14	2 36 55.68	20.491	12 25 0.2	72.13
15	1 3 52.31	19.233	5 59 47.0	89.39	15	2 38 58.73	20.525	12 32 11.4	71.60
16	1 5 47.77	19.253	6 8 42.7	89.17	16	2 41 1.98	20.559	12 39 19.4	71.07
17	1 7 43.34	19.271	6 17 37.0	88.94	17	2 43 5.44	20.594	12 46 24.2	70.53
18	1 9 39.02	19.291	6 26 30.0	88.71	18	2 45 9.11	20.629	12 53 25.7	69.97
19	1 11 34.83	19.311	6 35 21.5	88.47	19	2 47 12.99	20.665	13 0 23.8	69.42
20	1 13 30.75	19.330	6 44 11.6	88.23	20	2 49 17.09	20.701	13 7 18.7	68.86
21	1 15 26.79	19.351	6 53 0.3	87.98	21	2 51 21.40	20.737	13 14 10.1	68.28
22	1 17 22.96	19.372	7 1 47.4	87.72	22	2 53 25.93	20.773	13 20 58.1	67.71
23	1 19 19.25	19.393	N. 7 10 32.9	87.45	23	2 55 30.67	20.809	N. 13 27 42.6	67.13
<b>THURSDAY 2.</b>					<b>SATURDAY 4.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	1 21 15.67	19.414	N. 7 19 16.8	87.18	0	2 57 35.64	20.846	N. 13 34 23.6	66.53
1	1 23 12.22	19.437	7 27 59.1	86.92	1	2 59 40.82	20.883	13 41 1.0	65.93
2	1 25 8.91	19.459	7 36 39.8	86.63	2	3 1 46.23	20.920	13 47 34.8	65.33
3	1 27 5.73	19.481	7 45 18.7	86.33	3	3 3 51.86	20.957	13 54 4.9	64.72
4	1 29 2.68	19.504	7 53 55.8	86.04	4	3 5 57.71	20.994	14 0 31.4	64.10
5	1 30 59.78	19.528	8 2 31.2	85.75	5	3 8 3.79	21.033	14 6 54.1	63.47
6	1 32 57.01	19.551	8 11 4.8	85.44	6	3 10 10.10	21.070	14 13 13.0	62.83
7	1 34 54.39	19.576	8 19 36.5	85.12	7	3 12 16.63	21.108	14 19 28.1	62.20
8	1 36 51.92	19.601	8 28 6.2	84.80	8	3 14 23.40	21.147	14 25 39.4	61.55
9	1 38 49.60	19.626	8 36 34.1	84.48	9	3 16 30.39	21.185	14 31 46.7	60.89
10	1 40 47.42	19.650	8 44 59.9	84.14	10	3 18 37.62	21.223	14 37 50.1	60.23
11	1 42 45.40	19.676	8 53 23.8	83.81	11	3 20 45.07	21.262	14 43 49.4	59.55
12	1 44 43.53	19.701	9 1 45.6	83.45	12	3 22 52.76	21.302	14 49 44.7	58.88
13	1 46 41.81	19.728	9 10 5.2	83.10	13	3 25 0.69	21.341	14 55 36.0	58.20
14	1 48 40.26	19.754	9 18 22.8	82.75	14	3 27 8.85	21.379	15 1 23.1	57.50
15	1 50 38.86	19.781	9 26 38.2	82.38	15	3 29 17.24	21.419	15 7 6.0	56.80
16	1 52 37.63	19.809	9 34 51.3	82.00	16	3 31 25.88	21.459	15 12 44.7	56.10
17	1 54 36.57	19.837	9 43 2.2	81.63	17	3 33 34.75	21.498	15 18 19.2	55.38
18	1 56 35.67	19.863	9 51 10.9	81.24	18	3 35 43.85	21.538	15 23 49.3	54.66
19	1 58 34.93	19.892	9 59 17.1	80.85	19	3 37 53.20	21.578	15 29 15.1	53.93
20	2 0 34.37	19.921	10 7 21.1	80.46	20	3 40 2.79	21.618	15 34 36.5	53.20
21	2 2 33.98	19.950	10 15 22.6	80.04	21	3 42 12.61	21.658	15 39 53.5	52.46
22	2 4 33.77	19.979	10 23 21.6	79.63	22	3 44 22.68	21.698	15 45 6.0	51.70
23	2 6 33.73	20.009	10 31 18.2	79.22	23	3 46 32.99	21.738	15 50 13.9	50.94
24	2 8 33.88	20.039	N. 10 39 12.2	78.79	24	3 48 43.54	21.778	N. 15 55 17.3	50.18

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 5.</b>					<b>TUESDAY 7.</b>				
	h m s	s	N. 15 55 17.3	50.18		h m s	s	N. 18 14 44.1	5.40
0	3 48 43.54	21.778	16 0 16.1	49.42	0	5 37 50.49	23.631	18 15 13.3	4.33
1	3 50 54.33	21.819	16 5 10.3	48.63	1	5 40 12.38	23.664	18 15 36.0	3.23
2	3 53 5.37	21.860	16 9 59.7	47.84	2	5 42 34.46	23.697	18 15 52.1	2.13
3	3 55 16.65	21.900	16 14 44.4	47.05	3	5 44 56.74	23.729	18 16 1.6	1.04
4	3 57 28.17	21.940	16 19 24.3	46.25	4	5 47 19.21	23.761	18 16 4.6	0.06
5	3 59 39.93	21.981	16 23 59.4	45.45	5	5 49 41.87	23.793	18 15 50.6	2.27
6	4 1 51.94	22.022	16 28 29.7	44.63	6	5 52 4.72	23.824	18 15 33.7	3.38
7	4 4 4.19	22.062	16 32 55.0	43.80	7	5 54 27.76	23.855	18 15 10.0	4.50
8	4 6 16.68	22.103	16 37 15.3	42.98	8	5 56 50.98	23.886	18 14 39.7	5.62
9	4 8 29.42	22.143	16 41 30.7	42.14	9	5 59 14.39	23.916	18 14 2.6	6.75
10	4 10 42.40	22.184	16 45 41.0	41.29	10	6 1 37.97	23.945	18 13 18.7	7.88
11	4 12 55.63	22.225	16 49 46.2	40.44	11	6 4 1.73	23.974	18 12 28.1	9.01
12	4 15 9.10	22.265	16 53 46.3	39.59	12	6 6 25.66	24.003	18 11 30.6	10.14
13	4 17 22.81	22.305	16 57 41.3	38.73	13	6 8 49.76	24.031	18 10 26.4	11.28
14	4 19 36.76	22.346	17 1 31.0	37.84	14	6 11 14.03	24.059	18 9 15.3	12.43
15	4 21 50.96	22.387	17 5 15.4	36.97	15	6 13 38.47	24.087	18 7 57.3	13.58
16	4 24 5.40	22.427	17 12 28.4	35.19	16	6 16 3.07	24.113	18 6 32.4	14.72
17	4 26 20.08	22.468	17 15 56.9	34.29	17	6 18 27.83	24.140	18 5 0.7	15.87
18	4 28 35.01	22.508	17 19 19.9	33.38	18	6 20 52.75	24.166	18 3 22.0	17.02
19	4 30 50.17	22.547	17 22 37.4	32.47	19	6 23 17.82	24.191	18 1 36.5	18.17
20	4 33 5.57	22.588	17 25 49.5	31.55	20	6 25 43.04	24.216	17 59 44.0	19.33
21	4 35 21.22	22.628	17 28 56.0	30.62	21	6 28 8.41	24.241	17 57 44.6	20.48
22	4 37 37.10	22.667			22	6 30 33.93	24.265		
23	4 39 53.22	22.707			23	6 32 59.59	24.288		
<b>MONDAY 6.</b>					<b>WEDNESDAY 8.</b>				
	h m s	s	N. 17 31 56.9	29.68		h m s	s	N. 17 55 38.2	21.65
0	4 42 9.58	22.747	17 34 52.2	28.75	0	6 35 25.39	24.311	17 53 24.8	22.81
1	4 44 26.18	22.786	17 37 41.9	27.80	1	6 37 51.32	24.333	17 51 4.5	23.98
2	4 46 43.01	22.825	17 40 25.8	26.84	2	6 40 17.39	24.356	17 48 37.1	25.14
3	4 49 0.08	22.864	17 43 4.0	25.88	3	6 42 43.59	24.378	17 46 2.8	26.30
4	4 51 17.38	22.903	17 45 36.4	24.92	4	6 45 9.92	24.398	17 43 21.5	27.47
5	4 53 34.92	22.942	17 48 3.0	23.94	5	6 47 36.37	24.418	17 40 33.2	28.64
6	4 55 52.68	22.980	17 50 23.7	22.97	6	6 50 2.94	24.438	17 37 37.8	29.81
7	4 58 10.68	23.019	17 52 38.6	21.98	7	6 52 29.63	24.458	17 34 35.5	30.97
8	5 0 28.91	23.057	17 54 47.5	20.98	8	6 54 56.43	24.477	17 31 26.2	32.14
9	5 2 47.36	23.094	17 56 50.4	19.98	9	6 57 23.35	24.495	17 28 9.8	33.32
10	5 5 6.04	23.133	17 58 47.3	18.98	10	6 59 50.37	24.513	17 24 46.4	34.48
11	5 7 24.95	23.170	18 0 38.2	17.97	11	7 2 17.50	24.530	17 21 16.0	35.65
12	5 9 44.08	23.207	18 2 22.9	16.95	12	7 4 44.73	24.547	17 17 38.6	36.82
13	5 12 3.43	23.243	18 4 1.6	15.93	13	7 7 12.06	24.563	17 13 54.2	37.99
14	5 14 23.00	23.280	18 5 34.1	14.90	14	7 9 39.49	24.578	17 10 2.7	39.16
15	5 16 42.79	23.317	18 7 0.4	13.87	15	7 12 7.00	24.593	17 6 4.3	40.32
16	5 19 2.80	23.352	18 8 20.5	12.83	16	7 14 34.61	24.608	17 1 58.9	41.48
17	5 21 23.03	23.389	18 9 34.3	11.78	17	7 17 2.30	24.623	16 57 46.5	42.65
18	5 23 43.47	23.424	18 10 41.9	10.73	18	7 19 30.08	24.637	16 53 27.1	43.82
19	5 26 4.12	23.459	18 11 43.1	9.68	19	7 21 57.94	24.649	16 49 0.7	44.98
20	5 28 24.98	23.494	18 12 38.0	8.61	20	7 24 25.87	24.661	16 44 27.4	46.13
21	5 30 46.05	23.529	18 13 26.4	7.54	21	7 26 53.87	24.673	16 39 47.2	47.28
22	5 33 7.33	23.563	18 14 8.5	6.48	22	7 29 21.95	24.685	16 35 0.0	48.44
23	5 35 28.81	23.597			23	7 31 50.09	24.696		
24	5 37 50.49	23.631	N. 18 14 44.1	5.40	24	7 34 18.30	24.706	N. 16 30 5.9	49.59

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 9.</b>					<b>SATURDAY 11.</b>				
	h m s	s	N. 16 30 5.9	49.59		h m s	s	N. 10 29 21.2	97.75
0	7 34 18.30	24.706	16 25 4.9	50.74	0	9 33 11.35	24.678	10 19 32.4	98.52
1	7 36 46.56	24.715	16 19 57.0	51.89	1	9 35 39.39	24.668	10 9 39.0	99.28
2	7 39 14.88	24.725	16 14 42.2	53.03	2	9 38 7.37	24.659	9 59 41.0	100.03
3	7 41 43.26	24.734	16 9 20.6	54.17	3	9 40 35.30	24.651	9 49 38.6	100.78
4	7 44 11.69	24.743	16 3 52.2	55.30	4	9 43 3.18	24.642	9 39 31.7	101.50
5	7 46 40.17	24.750	15 58 17.0	56.43	5	9 45 31.00	24.633	9 29 20.6	102.21
6	7 49 8.69	24.757	15 52 35.0	57.56	6	9 47 58.76	24.622	9 19 5.2	102.91
7	7 51 37.25	24.763	15 46 46.3	58.68	7	9 50 26.46	24.612	9 8 45.7	103.58
8	7 54 5.85	24.770	15 40 50.9	59.80	8	9 52 54.10	24.602	8 58 22.2	104.26
9	7 56 34.49	24.776	15 34 48.7	60.92	9	9 55 21.68	24.593	8 47 54.6	104.93
10	7 59 3.16	24.781	15 28 39.9	62.03	10	9 57 49.20	24.582	8 37 23.1	105.57
11	8 1 31.86	24.786	15 22 24.4	63.13	11	10 0 16.66	24.571	8 26 47.8	106.20
12	8 4 0.59	24.790	15 16 2.4	64.23	12	10 2 44.05	24.560	8 16 8.7	106.82
13	8 6 29.34	24.794	15 9 33.7	65.32	13	10 5 11.38	24.550	8 5 26.0	107.41
14	8 8 58.12	24.798	15 2 58.6	66.40	14	10 7 38.65	24.539	7 54 39.8	108.00
15	8 11 26.91	24.800	14 56 16.9	67.49	15	10 10 5.85	24.528	7 43 50.0	108.58
16	8 13 55.72	24.803	14 49 28.7	68.56	16	10 12 32.99	24.518	7 32 56.8	109.14
17	8 16 24.54	24.805	14 42 34.2	69.63	17	10 15 0.06	24.506	7 22 0.3	109.68
18	8 18 53.38	24.807	14 35 33.2	70.69	18	10 17 27.06	24.495	7 11 0.6	110.22
19	8 21 22.22	24.807	14 28 25.9	71.75	19	10 19 54.00	24.484	6 59 57.7	110.73
20	8 23 51.06	24.808	14 21 12.2	72.80	20	10 22 20.87	24.473	6 48 51.8	111.23
21	8 26 19.91	24.808	14 13 52.3	73.83	21	10 24 47.68	24.462	6 37 42.9	111.72
22	8 28 48.75	24.808	14 6 26.2	74.87	22	10 27 14.41	24.450	6 26 31.1	112.20
23	8 31 17.60	24.808			23	10 29 41.08	24.439		
<b>FRIDAY 10.</b>					<b>SUNDAY 12.</b>				
	h m s	s	N. 13 58 53.9	75.88		h m s	s	N. 6 15 16.5	112.66
0	8 33 46.44	24.806	13 51 15.5	76.90	0	10 32 7.68	24.428	6 3 59.2	113.10
1	8 36 15.27	24.804	13 43 30.9	77.92	1	10 34 34.21	24.417	5 52 39.3	113.52
2	8 38 44.09	24.803	13 35 40.3	78.92	2	10 37 0.68	24.406	5 41 16.9	113.93
3	8 41 12.90	24.800	13 27 43.7	79.91	3	10 39 27.08	24.394	5 29 52.1	114.33
4	8 43 41.69	24.798	13 19 41.2	80.90	4	10 41 53.41	24.383	5 18 24.9	114.72
5	8 46 10.47	24.795	13 11 32.8	81.89	5	10 44 19.67	24.371	5 6 55.5	115.08
6	8 48 39.23	24.791	13 3 18.5	82.86	6	10 46 45.86	24.359	4 55 24.0	115.43
7	8 51 7.96	24.788	12 54 58.5	83.82	7	10 49 11.98	24.348	4 43 50.4	115.77
8	8 53 36.68	24.783	12 46 32.8	84.78	8	10 51 38.04	24.338	4 32 14.8	116.09
9	8 56 5.36	24.778	12 38 1.4	85.73	9	10 54 4.03	24.326	4 20 37.3	116.40
10	8 58 34.02	24.775	12 29 24.4	86.66	10	10 56 29.95	24.314	4 8 58.0	116.68
11	9 1 2.66	24.770	12 20 41.8	87.56	11	10 58 55.80	24.303	3 57 17.1	116.95
12	9 3 31.26	24.763	12 11 53.8	88.46	12	11 1 21.58	24.292	3 45 34.6	117.21
13	9 5 59.82	24.758	12 3 0.3	89.36	13	11 3 47.30	24.281	3 33 50.6	117.45
14	9 8 28.35	24.753	11 54 1.5	90.25	14	11 6 12.95	24.269	3 22 5.2	117.68
15	9 10 56.85	24.746	11 44 57.3	91.13	15	11 8 38.53	24.258	3 10 18.5	117.89
16	9 13 25.30	24.738	11 35 47.9	91.99	16	11 11 4.05	24.247	2 58 30.5	118.08
17	9 15 53.71	24.732	11 26 33.4	92.85	17	11 13 29.49	24.236	2 46 41.5	118.26
18	9 18 22.08	24.725	11 17 13.7	93.70	18	11 15 54.88	24.226	2 34 51.4	118.43
19	9 20 50.41	24.718	11 7 49.0	94.53	19	11 18 20.20	24.214	2 23 0.4	118.58
20	9 23 18.70	24.710	10 58 19.4	95.35	20	11 20 45.45	24.203	2 11 8.5	118.71
21	9 25 46.93	24.702	10 48 44.8	96.17	21	11 23 10.64	24.193	1 59 15.9	118.82
22	9 28 15.12	24.694	10 39 5.4	96.97	22	11 25 35.76	24.183	1 47 22.7	118.92
23	9 30 43.26	24.686			23	11 28 0.83	24.172		
24	9 33 11.35	24.678	N. 10 29 21.2	97.75	24	11 30 25.82	24.161	N. 1 35 28.9	119.00

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 13.</b>					<b>WEDNESDAY 15.</b>				
	h m s	s	N. ° ' "	"		h m s	s	S. ° ' "	"
0	11 30 25.82	24.161	N. 1 35 28.9	119.00	0	13 25 22.59	23.767	S. 7 36 32.3	105.54
1	11 32 50.76	24.151	1 23 34.7	119.07	1	13 27 45.17	23.760	7 47 3.7	104.93
2	11 35 15.63	24.140	1 11 40.1	119.13	2	13 30 7.21	23.753	7 57 31.4	104.31
3	11 37 40.44	24.131	0 59 45.2	119.16	3	13 32 30.71	23.748	8 7 55.4	103.68
4	11 40 5.20	24.121	0 47 50.2	119.18	4	13 34 52.68	23.741	8 18 15.6	103.04
5	11 42 29.89	24.110	0 35 55.1	119.18	5	13 37 15.10	23.734	8 28 31.9	102.39
6	11 44 54.52	24.100	0 24 0.0	119.18	6	13 39 37.49	23.728	8 38 44.3	101.73
7	11 47 19.09	24.090	0 12 5.0	119.15	7	13 41 59.84	23.721	8 48 52.6	101.05
8	11 49 43.60	24.080	N. 0 0 10.2	119.11	8	13 44 22.14	23.714	8 58 56.9	100.38
9	11 52 8.05	24.071	S. 0 11 44.3	119.05	9	13 46 44.41	23.708	9 8 57.1	99.68
10	11 54 32.45	24.062	0 23 38.4	118.98	10	13 49 6.64	23.703	9 18 53.0	98.98
11	11 56 56.79	24.052	0 35 32.1	118.89	11	13 51 28.84	23.696	9 28 44.8	98.27
12	11 59 21.07	24.043	0 47 25.1	118.78	12	13 53 50.99	23.688	9 38 32.2	97.53
13	12 1 45.30	24.034	0 59 17.5	118.67	13	13 56 13.10	23.683	9 48 15.2	96.80
14	12 4 9.48	24.024	1 11 9.1	118.53	14	13 58 35.18	23.676	9 57 53.8	96.06
15	12 6 33.59	24.015	1 22 59.9	118.39	15	14 0 57.21	23.669	10 7 27.9	95.31
16	12 8 57.66	24.007	1 34 49.8	118.23	16	14 3 19.21	23.663	10 16 57.5	94.54
17	12 11 21.67	23.998	1 46 38.6	118.04	17	14 5 41.16	23.656	10 26 22.4	93.78
18	12 13 45.63	23.988	1 58 26.3	117.85	18	14 8 3.08	23.649	10 35 42.8	93.00
19	12 16 9.53	23.979	2 10 12.8	117.64	19	14 10 24.95	23.642	10 44 58.4	92.21
20	12 18 33.38	23.972	2 21 58.0	117.42	20	14 12 46.78	23.635	10 54 9.3	91.42
21	12 20 57.19	23.963	2 33 41.8	117.18	21	14 15 8.57	23.628	11 3 15.4	90.61
22	12 23 20.94	23.954	2 45 24.1	116.93	22	14 17 30.32	23.622	11 12 16.6	89.79
23	12 25 44.64	23.947	S. 2 57 4.9	116.66	23	14 19 52.03	23.614	S. 11 21 12.9	88.98
<b>TUESDAY 14.</b>					<b>THURSDAY 16.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	12 28 8.30	23.938	S. 3 84.4.0	116.38	0	14 22 13.69	23.607	S. 11 30 4.3	88.15
1	12 30 31.90	23.930	3 20 21.4	116.08	1	14 24 35.31	23.600	11 38 50.7	87.31
2	12 32 55.46	23.923	3 31 57.0	115.77	2	14 26 56.89	23.593	11 47 32.0	86.47
3	12 35 18.97	23.914	3 43 30.6	115.44	3	14 29 18.42	23.585	11 56 8.3	85.62
4	12 37 42.43	23.907	3 55 2.3	115.11	4	14 31 39.91	23.578	12 4 39.4	84.75
5	12 40 5.85	23.899	4 6 31.9	114.75	5	14 34 1.35	23.570	12 13 5.3	83.89
6	12 42 29.22	23.892	4 17 59.3	114.38	6	14 36 22.75	23.562	12 21 26.1	83.03
7	12 44 52.55	23.884	4 29 24.5	114.00	7	14 38 44.09	23.553	12 29 41.6	82.14
8	12 47 15.83	23.877	4 40 47.3	113.61	8	14 41 5.39	23.546	12 37 51.8	81.25
9	12 49 39.07	23.869	4 52 7.8	113.20	9	14 43 26.64	23.538	12 45 56.6	80.36
10	12 52 2.26	23.862	5 3 25.7	112.78	10	14 45 47.85	23.530	12 53 56.1	79.47
11	12 54 25.41	23.855	5 14 41.1	112.35	11	14 48 9.00	23.521	13 1 50.2	78.56
12	12 56 48.52	23.848	5 25 53.9	111.90	12	14 50 30.10	23.513	13 9 38.8	77.64
13	12 59 11.58	23.840	5 37 3.9	111.43	13	14 52 51.15	23.503	13 17 21.9	76.73
14	13 1 34.60	23.833	5 48 11.1	110.96	14	14 55 12.14	23.495	13 24 59.5	75.81
15	13 3 57.58	23.827	5 59 15.4	110.48	15	14 57 33.09	23.486	13 32 31.6	74.88
16	13 6 20.52	23.820	6 10 16.8	109.98	16	14 59 53.97	23.476	13 39 58.1	73.95
17	13 8 43.42	23.813	6 21 15.1	109.46	17	15 2 14.80	23.468	13 47 19.0	73.01
18	13 11 6.28	23.807	6 32 10.3	108.94	18	15 4 35.58	23.458	13 54 34.2	72.07
19	13 13 29.10	23.800	6 43 2.4	108.41	19	15 6 56.30	23.448	14 1 43.8	71.12
20	13 15 51.88	23.793	6 53 51.2	107.85	20	15 9 16.96	23.438	14 8 47.6	70.17
21	13 18 14.61	23.786	7 4 36.6	107.28	21	15 11 37.56	23.428	14 15 45.8	69.22
22	13 20 37.31	23.780	7 15 18.6	106.72	22	15 13 58.10	23.418	14 22 38.2	68.25
23	13 22 59.97	23.773	7 25 57.2	106.14	23	15 16 18.57	23.408	14 29 24.8	67.28
24	13 25 22.59	23.767	S. 7 36 32.3	105.54	24	15 18 38.99	23.398	S. 14 36 5.6	66.31

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>FRIDAY 17.</b>					<b>SUNDAY 19.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	15 18 38.99	23.398	S. 14 36 5.6	66.31	0	17 9 18.17	22.615	S. 17 58 22.2	17.72
1	15 20 59.34	23.386	14 42 40.5	65.34	1	17 11 33.79	22.593	18 0 5.5	16.72
2	15 23 19.62	23.375	14 49 9.7	64.37	2	17 13 49.28	22.570	18 1 42.8	15.71
3	15 25 39.84	23.364	14 55 32.9	63.38	3	17 16 4.63	22.548	18 3 14.0	14.70
4	15 27 59.99	23.352	15 1 50.3	62.40	4	17 18 19.85	22.525	18 4 39.2	13.71
5	15 30 20.06	23.340	15 8 1.7	61.41	5	17 20 34.93	22.501	18 5 58.5	12.72
6	15 32 40.07	23.329	15 14 7.2	60.42	6	17 22 49.86	22.478	18 7 11.8	11.72
7	15 35 0.01	23.317	15 20 6.7	59.43	7	17 25 4.66	22.454	18 8 19.1	10.73
8	15 37 19.87	23.304	15 26 0.3	58.43	8	17 27 19.31	22.430	18 9 20.5	9.73
9	15 39 39.66	23.292	15 31 47.9	57.43	9	17 29 33.82	22.406	18 10 15.9	8.75
10	15 41 59.38	23.279	15 37 29.5	56.43	10	17 31 48.18	22.382	18 11 5.5	7.78
11	15 44 19.01	23.266	15 43 5.0	55.42	11	17 34 2.40	22.358	18 11 49.2	6.79
12	15 46 38.57	23.253	15 48 34.5	54.42	12	17 36 16.47	22.333	18 12 27.0	5.81
13	15 48 58.05	23.240	15 53 58.0	53.41	13	17 38 30.39	22.308	18 12 58.9	4.83
14	15 51 17.45	23.227	15 59 15.4	52.39	14	17 40 44.16	22.283	18 13 25.0	3.87
15	15 53 36.77	23.213	16 4 26.7	51.38	15	17 42 57.78	22.258	18 13 45.3	2.89
16	15 55 56.00	23.198	16 9 32.0	50.37	16	17 45 11.25	22.232	18 13 59.7	1.93
17	15 58 15.14	23.183	16 14 31.1	49.35	17	17 47 24.56	22.206	18 14 8.4	0.97
18	16 0 34.20	23.169	16 19 24.2	48.33	18	17 49 37.72	22.181	18 14 11.3	0.01
19	16 2 53.17	23.154	16 24 11.1	47.31	19	17 51 50.73	22.155	18 14 8.5	0.94
20	16 5 12.05	23.139	16 28 51.9	46.29	20	17 54 3.58	22.128	18 14 0.0	1.90
21	16 7 30.84	23.124	16 33 26.6	45.28	21	17 56 16.27	22.102	18 13 45.7	2.85
22	16 9 49.54	23.108	16 37 55.2	44.25	22	17 58 28.80	22.075	18 13 25.8	3.79
23	16 12 8.14	23.093	S. 16 42 17.6	43.23	23	18 0 41.17	22.048	S. 18 13 0.2	4.73
<b>SATURDAY 18.</b>					<b>MONDAY 20.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	16 14 26.65	23.077	S. 16 46 33.9	42.20	0	18 2 53.38	22.022	S. 18 12 29.0	5.67
1	16 16 45.06	23.060	16 50 44.0	41.18	1	18 5 5.43	21.995	18 11 52.2	6.60
2	16 19 3.37	23.043	16 54 48.0	40.15	2	18 7 17.32	21.968	18 11 9.8	7.53
3	16 21 21.58	23.027	16 58 45.8	39.13	3	18 9 29.05	21.941	18 10 21.8	8.47
4	16 23 39.69	23.010	17 2 37.5	38.10	4	18 11 40.61	21.913	18 9 28.2	9.38
5	16 25 57.70	22.993	17 6 23.0	37.08	5	18 13 52.00	21.885	18 8 29.2	10.30
6	16 28 15.60	22.974	17 10 2.4	36.05	6	18 16 3.23	21.858	18 7 24.6	11.22
7	16 30 33.40	22.957	17 13 35.6	35.03	7	18 18 14.29	21.830	18 6 14.6	12.13
8	16 32 51.08	22.938	17 17 2.7	34.00	8	18 20 25.19	21.802	18 4 59.1	13.03
9	16 35 8.66	22.921	17 20 23.6	32.97	9	18 22 35.91	21.773	18 3 38.2	13.93
10	16 37 26.13	22.902	17 23 38.3	31.94	10	18 24 46.47	21.746	18 2 11.9	14.83
11	16 39 43.48	22.883	17 26 46.9	30.93	11	18 26 56.86	21.718	18 0 40.2	15.73
12	16 42 0.72	22.864	17 29 49.4	29.90	12	18 29 7.08	21.689	17 59 3.2	16.62
13	16 44 17.85	22.844	17 32 45.7	28.88	13	18 31 17.13	21.661	17 57 20.8	17.50
14	16 46 34.85	22.824	17 35 35.9	27.86	14	18 33 27.01	21.633	17 55 33.2	18.38
15	16 48 51.74	22.805	17 38 20.0	26.84	15	18 35 36.72	21.604	17 53 40.2	19.27
16	16 51 8.51	22.785	17 40 58.0	25.82	16	18 37 46.26	21.575	17 51 42.0	20.13
17	16 53 25.16	22.764	17 43 29.8	24.79	17	18 39 55.62	21.546	17 49 38.6	20.99
18	16 55 41.68	22.743	17 45 55.5	23.78	18	18 42 4.81	21.518	17 47 30.1	21.86
19	16 57 58.08	22.723	17 48 15.2	22.77	19	18 44 13.83	21.488	17 45 16.3	22.73
20	17 0 14.36	22.703	17 50 28.7	21.75	20	18 46 22.67	21.459	17 42 57.4	23.58
21	17 2 30.51	22.680	17 52 36.2	20.74	21	18 48 31.34	21.430	17 40 33.4	24.43
22	17 4 46.53	22.658	17 54 37.6	19.73	22	18 50 39.83	21.401	17 38 4.3	25.28
23	17 7 2.41	22.637	17 56 32.9	18.72	23	18 52 48.15	21.373	17 35 30.1	26.11
24	17 9 18.17	22.615	S. 17 58 22.2	17.72	24	18 54 56.30	21.343	S. 17 32 51.0	26.94



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
TUESDAY 21.					THURSDAY 23.				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	18 54 56	30	21 343	S. 17 32 51	0	20 34 4	38	19 997	S. 13 56 36
1	18 57 4	27	21 313	17 30 6	1	20 36 4	39	19 973	13 50 27
2	18 59 12	06	21 284	17 27 17	2	20 38 4	15	19 948	13 44 15
3	19 1 19	68	21 256	17 24 23	3	20 40 3	76	19 923	13 37 59
4	19 3 27	13	21 226	17 21 24	4	20 42 3	22	19 898	13 31 40
5	19 5 34	39	21 196	17 18 20	5	20 44 2	54	19 874	13 25 17
6	19 7 41	48	21 168	17 15 11	6	20 46 1	71	19 850	13 18 51
7	19 9 48	40	21 138	17 11 58	7	20 48 0	74	19 826	13 12 21
8	19 11 55	14	21 109	17 8 39	8	20 49 59	62	19 803	13 5 49
9	19 14 1	71	21 080	17 5 16	9	20 51 58	37	19 780	12 59 13
10	19 16 8	10	21 050	17 1 48	10	20 53 56	98	19 757	12 52 33
11	19 18 14	31	21 021	16 58 16	11	20 55 55	45	19 733	12 45 51
12	19 20 20	35	20 993	16 54 39	12	20 57 53	78	19 710	12 39 5
13	19 22 26	22	20 963	16 50 57	13	20 59 51	97	19 688	12 32 16
14	19 24 31	91	20 933	16 47 10	14	21 1 50	03	19 666	12 25 24
15	19 26 37	42	20 904	16 43 19	15	21 3 47	96	19 644	12 18 29
16	19 28 42	76	20 876	16 39 23	16	21 5 45	76	19 623	12 11 31
17	19 30 47	93	20 847	16 35 23	17	21 7 43	43	19 601	12 4 30
18	19 32 52	92	20 818	16 31 18	18	21 9 40	97	19 579	11 57 26
19	19 34 57	74	20 788	16 27 9	19	21 11 38	38	19 558	11 50 19
20	19 37 2	38	20 759	16 22 55	20	21 13 35	67	19 538	11 43 9
21	19 39 6	85	20 731	16 18 37	21	21 15 32	83	19 517	11 35 56
22	19 41 11	15	20 703	16 14 15	22	21 17 29	87	19 497	11 28 40
23	19 43 15	28	20 674	S. 16 9 48	23	21 19 26	79	19 478	S. 11 21 22
WEDNESDAY 22.					FRIDAY 24.				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	19 45 19	24	20 646	S. 16 5 17	0	21 21 23	60	19 458	S. 11 14 0
1	19 47 23	03	20 617	16 0 42	1	21 23 20	28	19 438	11 6 36
2	19 49 26	64	20 588	15 56 2	2	21 25 16	85	19 418	10 59 9
3	19 51 30	09	20 560	15 51 18	3	21 27 13	30	19 400	10 51 40
4	19 53 33	36	20 532	15 46 30	4	21 29 9	65	19 382	10 44 7
5	19 55 36	47	20 504	15 41 38	5	21 31 5	88	19 363	10 36 32
6	19 57 39	41	20 476	15 36 41	6	21 33 2	00	19 344	10 28 55
7	19 59 42	18	20 448	15 31 41	7	21 34 58	01	19 327	10 21 15
8	20 1 44	78	20 420	15 26 36	8	21 36 53	92	19 309	10 13 32
9	20 3 47	22	20 393	15 21 28	9	21 38 49	72	19 292	10 5 47
10	20 5 49	50	20 366	15 16 15	10	21 40 45	42	19 275	9 57 59
11	20 7 51	61	20 338	15 10 59	11	21 42 41	02	19 259	9 50 9
12	20 9 53	55	20 311	15 5 38	12	21 44 36	53	19 243	9 42 17
13	20 11 55	34	20 284	15 0 14	13	21 46 31	93	19 226	9 34 22
14	20 13 56	96	20 257	14 54 46	14	21 48 27	24	19 210	9 26 24
15	20 15 58	42	20 230	14 49 13	15	21 50 22	45	19 195	9 18 25
16	20 17 59	72	20 203	14 43 37	16	21 52 17	58	19 180	9 10 23
17	20 20 0	86	20 177	14 37 58	17	21 54 12	61	19 164	9 2 19
18	20 22 1	84	20 151	14 32 14	18	21 56 7	55	19 150	8 54 12
19	20 24 2	67	20 125	14 26 27	19	21 58 2	41	19 136	8 46 4
20	20 26 3	34	20 098	14 20 36	20	21 59 57	18	19 122	8 37 53
21	20 28 3	85	20 073	14 14 42	21	22 1 51	87	19 108	8 29 40
22	20 30 4	22	20 048	14 8 43	22	22 3 46	48	19 095	8 21 25
23	20 32 4	43	20 022	14 2 42	23	22 5 41	01	19 082	8 13 8
24	20 34 4	48	19 997	S. 13 56 36	24	22 7 35	46	19 069	S. 8 4 49

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>SATURDAY 25.</b>					<b>MONDAY 27.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	22 7 35.46	19.069	8 4 49.6	83.34	0	23 38 16.89	18.849	S. 0 56 29.6	92.98
1	22 9 29.84	19.057	7 56 28.5	83.68	1	23 40 10.00	18.853	0 47 11.5	93.04
2	22 11 24.14	19.044	7 48 5.5	84.00	2	23 42 3.13	18.858	0 37 53.1	93.10
3	22 13 18.37	19.033	7 39 40.5	84.32	3	23 43 56.29	18.863	0 28 34.3	93.15
4	22 15 12.54	19.022	7 31 13.7	84.63	4	23 45 49.48	18.868	0 19 15.3	93.19
5	22 17 6.63	19.010	7 22 44.9	84.94	5	23 47 42.70	18.873	0 9 56.0	93.23
6	22 19 0.66	18.999	7 14 14.4	85.24	6	23 49 35.95	18.878	S. 0 0 36.5	93.27
7	22 20 54.62	18.989	7 5 42.0	85.55	7	23 51 29.24	18.885	N. 0 8 43.2	93.29
8	22 22 48.53	18.979	6 57 7.8	85.83	8	23 53 22.57	18.891	0 18 3.0	93.31
9	22 24 42.37	18.968	6 48 32.0	86.12	9	23 55 15.93	18.898	0 27 22.9	93.32
10	22 26 36.15	18.959	6 39 54.4	86.41	10	23 57 9.34	18.905	0 36 42.8	93.33
11	22 28 29.88	18.950	6 31 15.1	86.68	11	23 59 2.79	18.912	0 46 2.9	93.34
12	22 30 23.55	18.941	6 22 34.2	86.95	12	0 0 56.28	18.919	0 55 22.9	93.33
13	22 32 17.17	18.933	6 13 51.7	87.22	13	0 2 49.82	18.928	1 4 42.8	93.32
14	22 34 10.75	18.926	6 5 7.6	87.48	14	0 4 43.42	18.937	1 14 2.7	93.31
15	22 36 4.27	18.917	5 56 22.0	87.73	15	0 6 37.06	18.945	1 23 22.5	93.28
16	22 37 57.75	18.909	5 47 34.9	87.98	16	0 8 30.76	18.954	1 32 42.1	93.26
17	22 39 51.18	18.902	5 38 46.3	88.23	17	0 10 24.51	18.964	1 42 1.6	93.23
18	22 41 44.57	18.895	5 29 56.2	88.47	18	0 12 18.33	18.974	1 51 20.8	93.18
19	22 43 37.92	18.888	5 21 4.7	88.69	19	0 14 12.20	18.983	2 0 39.7	93.13
20	22 45 31.23	18.883	5 12 11.9	88.92	20	0 16 6.13	18.994	2 9 58.4	93.08
21	22 47 24.51	18.877	5 3 17.7	89.14	21	0 18 0.13	19.006	2 19 16.7	93.03
22	22 49 17.75	18.871	4 54 22.2	89.36	22	0 19 54.20	19.018	2 28 34.7	92.96
23	22 51 10.96	18.866	S. 4 45 25.4	89.57	23	0 21 48.33	19.028	N. 2 37 52.2	92.88
<b>SUNDAY 26.</b>					<b>TUESDAY 28.</b>				
	h m s	s	S. ° ' "	"		h m s	s	N. ° ' "	"
0	22 53 4.14	18.861	S. 4 36 27.4	89.77	0	0 23 42.54	19.041	N. 2 47 9.3	92.81
1	22 54 57.29	18.857	4 27 28.2	89.97	1	0 25 36.82	19.053	2 56 25.9	92.73
2	22 56 50.42	18.853	4 18 27.8	90.17	2	0 27 31.17	19.065	3 5 42.0	92.63
3	22 58 43.52	18.849	4 9 26.2	90.35	3	0 29 25.60	19.078	3 14 57.5	92.53
4	23 0 36.61	18.846	4 0 23.6	90.53	4	0 31 20.11	19.093	3 24 12.4	92.43
5	23 2 29.67	18.842	3 51 19.8	90.72	5	0 33 14.71	19.106	3 33 26.7	92.33
6	23 4 22.71	18.839	3 42 15.0	90.88	6	0 35 9.38	19.119	3 42 40.4	92.22
7	23 6 15.74	18.838	3 33 9.2	91.04	7	0 37 4.14	19.133	3 51 53.3	92.08
8	23 8 8.76	18.835	3 24 2.5	91.21	8	0 38 58.98	19.148	4 1 5.4	91.96
9	23 10 1.76	18.833	3 14 54.7	91.37	9	0 40 53.92	19.163	4 10 16.8	91.83
10	23 11 54.75	18.832	3 5 46.1	91.51	10	0 42 48.94	19.178	4 19 27.4	91.68
11	23 13 47.74	18.831	2 56 36.6	91.65	11	0 44 44.06	19.195	4 28 37.0	91.53
12	23 15 40.72	18.830	2 47 26.3	91.78	12	0 46 39.28	19.211	4 37 45.8	91.39
13	23 17 33.70	18.830	2 38 15.2	91.92	13	0 48 34.59	19.227	4 46 53.7	91.23
14	23 19 26.68	18.830	2 29 3.3	92.04	14	0 50 30.00	19.244	4 56 0.6	91.06
15	23 21 19.66	18.831	2 19 50.7	92.17	15	0 52 25.52	19.261	5 5 6.4	90.88
16	23 23 12.65	18.831	2 10 37.3	92.28	16	0 54 21.13	19.278	5 14 11.2	90.71
17	23 25 5.63	18.832	2 1 23.3	92.38	17	0 56 16.85	19.296	5 23 14.9	90.53
18	23 26 58.63	18.834	1 52 8.7	92.48	18	0 58 12.68	19.314	5 32 17.5	90.33
19	23 28 51.64	18.836	1 42 53.5	92.58	19	1 0 8.62	19.332	5 41 18.9	90.13
20	23 30 44.66	18.838	1 33 37.7	92.68	20	1 2 4.66	19.350	5 50 19.1	89.93
21	23 32 37.69	18.840	1 24 21.3	92.77	21	1 4 0.82	19.370	5 59 18.0	89.71
22	23 34 30.74	18.843	1 15 4.5	92.83	22	1 5 57.10	19.389	6 8 15.6	89.49
23	23 36 23.80	18.846	1 5 47.3	92.91	23	1 7 53.49	19.408	6 17 11.9	89.27
24	23 38 16.89	18.849	S. 0 56 29.6	92.98	24	1 9 50.00	19.428	N. 6 26 6.8	89.03

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 29.</b>					<b>FRIDAY 31.</b>				
	<b>h m s</b>	<b>s</b>				<b>h m s</b>	<b>s</b>		
0	1 9 50.00	19.428	N. 6° 26' 6".8	89.03	0	2 45 55.25	20.703	N. 12° 53' 49".8	69.84
1	1 11 46.63	19.448	6 35 0.3	88.80	1	2 47 59.56	20.734	13 0 47.2	69.27
2	1 13 43.38	19.469	6 43 52.4	88.56	2	2 50 4.06	20.766	13 7 41.1	68.68
3	1 15 40.26	19.490	6 52 43.0	88.30	3	2 52 8.75	20.798	13 14 31.4	68.10
4	1 17 37.26	19.511	7 1 32.0	88.04	4	2 54 13.64	20.831	13 21 18.3	67.52
5	1 19 34.39	19.533	7 10 19.5	87.78	5	2 56 18.72	20.863	13 28 1.6	66.91
6	1 21 31.65	19.554	7 19 5.3	87.50	6	2 58 23.99	20.895	13 34 41.2	66.30
7	1 23 29.04	19.577	7 27 49.5	87.23	7	3 0 29.46	20.928	13 41 17.2	65.69
8	1 25 26.57	19.599	7 36 32.0	86.94	8	3 2 35.12	20.960	13 47 49.5	65.08
9	1 27 24.23	19.621	7 45 12.8	86.65	9	3 4 40.98	20.993	13 54 18.1	64.44
10	1 29 22.02	19.644	7 53 51.8	86.35	10	3 6 47.03	21.026	14 0 42.8	63.80
11	1 31 19.96	19.668	8 2 29.0	86.04	11	3 8 53.29	21.059	14 7 3.7	63.17
12	1 33 18.03	19.691	8 11 4.3	85.73	12	3 10 59.74	21.092	14 13 20.8	62.52
13	1 35 16.25	19.715	8 19 37.8	85.42	13	3 13 6.39	21.124	14 19 33.9	61.85
14	1 37 14.61	19.738	8 28 9.3	85.08	14	3 15 13.23	21.158	14 25 43.0	61.19
15	1 39 13.11	19.763	8 36 38.8	84.75	15	3 17 20.28	21.192	14 31 48.2	60.53
16	1 41 11.77	19.788	8 45 6.3	84.41	16	3 19 27.53	21.225	14 37 49.3	59.84
17	1 43 10.57	19.813	8 53 31.7	84.06	17	3 21 34.98	21.258	14 43 46.3	59.16
18	1 45 9.52	19.838	9 1 55.0	83.71	18	3 23 42.62	21.291	14 49 39.2	58.47
19	1 47 8.62	19.863	9 10 16.2	83.35	19	3 25 50.47	21.325	14 55 27.9	57.77
20	1 49 7.88	19.889	9 18 35.2	82.98	20	3 27 58.52	21.358	15 1 12.4	57.07
21	1 51 7.29	19.915	9 26 52.0	82.61	21	3 30 6.77	21.392	15 6 52.7	56.36
22	1 53 6.86	19.941	9 35 6.5	82.23	22	3 32 15.22	21.425	15 12 28.7	55.63
23	1 55 6.58	19.968	N. 9 43 18.7	81.84	23	3 34 23.87	21.459	N. 15 18 0.3	54.91
<b>THURSDAY 30.</b>					<b>SATURDAY, APRIL 1.</b>				
0	1 57 6.47	19.995	N. 9 51 28.6	81.44	0	3 36 32.73	21.493	N. 15 23 27.6	54.18
1	1 59 6.52	20.022	9 59 36.0	81.04					
2	2 1 6.73	20.048	10 7 41.1	80.63					
3	2 3 7.10	20.076	10 15 43.6	80.21					
4	2 5 7.64	20.104	10 23 43.6	79.79					
5	2 7 8.35	20.133	10 31 41.1	79.36					
6	2 9 9.23	20.160	10 39 35.9	78.92					
7	2 11 10.27	20.188	10 47 28.1	78.48					
8	2 13 11.49	20.218	10 55 17.7	78.03					
9	2 15 12.88	20.247	11 3 4.5	77.57					
10	2 17 14.45	20.276	11 10 48.5	77.10					
11	2 19 16.19	20.304	11 18 29.7	76.63					
12	2 21 18.10	20.333	11 26 8.0	76.15					
13	2 23 20.19	20.363	11 33 43.5	75.67					
14	2 25 22.46	20.393	11 41 16.0	75.17					
15	2 27 24.91	20.424	11 48 45.5	74.67					
16	2 29 27.55	20.454	11 56 12.0	74.16					
17	2 31 30.36	20.484	12 3 35.4	73.64					
18	2 33 33.36	20.515	12 10 55.7	73.13					
19	2 35 36.54	20.546	12 18 12.9	72.59					
20	2 37 39.91	20.577	12 25 26.8	72.05					
21	2 39 43.46	20.608	12 32 37.5	71.52					
22	2 41 47.20	20.639	12 39 45.0	70.97					
23	2 43 51.13	20.671	12 46 49.1	70.40					
24	2 45 55.25	20.703	N. 12 53 49.8	69.84					

<b>PHASES OF THE MOON.</b>				
			<b>h m</b>	
Mar. 6	☾ First Quarter	-	7 21.6	
12	☾ Full Moon	-	23 14.4	
19	☾ Last Quarter	-	20 43.0	
28	● New Moon	-	1 3.4	

Mar. 12	☾ Perigee	-	-	-	<b>h</b>	
25	☾ Apogee	-	-	-		
					11.5	
					7.6	

## AT APPARENT NOON.

Date.		THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be added to		Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.		subtracted from Apparent Time.		
		h m s	s	N. ° ' "	"	m s	m s	s	
Sat.	1	0 40 22.42	9.102	N. 4 20 47.5	57.96	1 4.45	4 6.90	0.752	
Sun.	2	0 44 0.92	9.106	4 43 56.0	57.75	1 4.47	3 48.89	0.748	
Mon.	3	0 47 39.51	9.110	5 6 59.4	57.53	1 4.49	3 30.98	0.744	
Tues.	4	0 51 18.22	9.116	5 29 57.3	57.29	1 4.51	3 13.19	0.738	
Wed.	5	0 54 57.08	9.122	5 52 49.4	57.04	1 4.54	2 55.54	0.732	
Thur.	6	0 58 36.08	9.129	6 15 35.3	56.78	1 4.56	2 38.04	0.726	
Frid.	7	1 2 15.25	9.136	6 38 14.6	56.49	1 4.59	2 20.71	0.718	
Sat.	8	1 5 54.62	9.145	7 0 47.0	56.20	1 4.63	2 3.58	0.710	
Sun.	9	1 9 34.21	9.154	7 23 12.3	55.90	1 4.66	1 46.65	0.700	
Mon.	10	1 13 14.02	9.164	7 45 30.0	55.57	1 4.70	1 29.96	0.690	
Tues.	11	1 16 54.10	9.176	8 7 39.8	55.24	1 4.74	1 13.53	0.679	
Wed.	12	1 20 34.45	9.188	8 29 41.5	54.89	1 4.78	0 57.37	0.667	
Thur.	13	1 24 15.10	9.201	8 51 34.7	54.53	1 4.83	0 41.52	0.654	
Frid.	14	1 27 56.08	9.215	9 13 19.1	54.16	1 4.87	0 25.98	0.640	
Sat.	15	1 31 37.40	9.229	9 34 54.4	53.78	1 4.92	0 10.79	0.626	
Sun.	16	1 35 19.07	9.244	9 56 20.3	53.37	1 4.97	0 4.05	0.610	
Mon.	17	1 39 1.12	9.260	10 17 36.3	52.96	1 5.03	0 18.51	0.594	
Tues.	18	1 42 43.57	9.277	10 38 42.3	52.53	1 5.08	0 32.57	0.577	
Wed.	19	1 46 26.43	9.294	10 59 37.9	52.09	1 5.14	0 46.23	0.560	
Thur.	20	1 50 9.70	9.312	11 20 22.6	51.63	1 5.20	0 59.47	0.543	
Frid.	21	1 53 53.41	9.331	11 40 56.3	51.16	1 5.26	1 12.28	0.524	
Sat.	22	1 57 37.57	9.350	12 1 18.5	50.68	1 5.33	1 24.64	0.506	
Sun.	23	2 1 22.19	9.369	12 21 29.0	50.18	1 5.39	1 36.55	0.486	
Mon.	24	2 5 7.27	9.388	12 41 27.3	49.67	1 5.46	1 47.99	0.467	
Tues.	25	2 8 52.83	9.409	13 1 13.2	49.15	1 5.53	1 58.95	0.447	
Wed.	26	2 12 38.88	9.429	13 20 46.3	48.60	1 5.60	2 9.43	0.426	
Thur.	27	2 16 25.42	9.449	13 40 6.2	48.05	1 5.67	2 19.42	0.406	
Frid.	28	2 20 12.45	9.470	13 59 12.7	47.48	1 5.74	2 28.91	0.385	
Sat.	29	2 24 0.00	9.492	14 18 5.4	46.90	1 5.82	2 37.89	0.364	
Sun.	30	2 27 48.05	9.513	14 36 44.0	46.31	1 5.89	2 46.37	0.342	
Mon.	31	2 31 36.62	9.534	N.14 55 8.1	45.70	1 5.97	2 54.33	0.321	

\* Mean Time of the Semidiameter passing may be found by subtracting 0<sup>s</sup>.18 from the Sidereal Time

## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be added to	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*	subtracted from Apparent Time.	
		h m s	N. ° ' "	' "	m s	h m s
Sat.	1	0 40 21.80	N. 4 20 43.5	16 1.58	4 6.95	0 36 14.85
Sun.	2	0 44 0.34	4 43 52.3	16 1.31	3 48.94	0 40 11.40
Mon.	3	0 47 38.98	5 6 56.1	16 1.04	3 31.03	0 44 7.95
Tues.	4	0 51 17.74	5 29 54.3	16 0.77	3 13.23	0 48 4.50
Wed.	5	0 54 56.63	5 52 46.6	16 0.50	2 55.58	0 52 1.05
Thur.	6	0 58 35.68	6 15 32.8	16 0.23	2 38.07	0 55 57.60
Frid.	7	1 2 14.90	6 38 12.4	15 59.96	2 20.74	0 59 54.16
Sat.	8	1 5 54.31	7 0 45.1	15 59.69	2 3.60	1 3 50.71
Sun.	9	1 9 33.94	7 23 10.6	15 59.42	1 46.67	1 7 47.26
Mon.	10	1 13 13.80	7 45 28.6	15 59.15	1 29.98	1 11 43.81
Tues.	11	1 16 53.91	8 7 38.7	15 58.88	1 13.55	1 15 40.37
Wed.	12	1 20 34.30	8 29 40.6	15 58.61	0 57.39	1 19 36.92
Thur.	13	1 24 15.00	8 51 34.1	15 58.34	0 41.53	1 23 33.47
Frid.	14	1 27 56.01	9 13 18.7	15 58.07	0 25.99	1 27 30.02
Sat.	15	1 31 37.37	9 34 54.2	15 57.79	0 10.79	1 31 26.58
Sun.	16	1 35 19.08	9 56 20.3	15 57.52	0 4.05	1 35 23.13
Mon.	17	1 39 1.17	10 17 36.6	15 57.25	0 18.51	1 39 19.68
Tues.	18	1 42 43.66	10 38 42.8	15 56.98	0 32.58	1 43 16.23
Wed.	19	1 46 26.55	10 59 38.5	15 56.71	0 46.24	1 47 12.79
Thur.	20	1 50 9.86	11 20 23.5	15 56.45	0 59.48	1 51 9.34
Frid.	21	1 53 53.60	11 40 57.3	15 56.18	1 12.29	1 55 5.89
Sat.	22	1 57 37.79	12 1 19.7	15 55.92	1 24.65	1 59 2.45
Sun.	23	2 1 22.44	12 21 30.3	15 55.66	1 36.56	2 2 59.00
Mon.	24	2 5 7.55	12 41 28.8	15 55.40	1 48.00	2 6 55.55
Tues.	25	2 8 53.14	13 1 14.8	15 55.14	1 58.96	2 10 52.11
Wed.	26	2 12 39.22	13 20 48.0	15 54.89	2 9.44	2 14 48.66
Thur.	27	2 16 25.78	13 40 8.1	15 54.64	2 19.43	2 18 45.21
Frid.	28	2 20 12.84	13 59 14.7	15 54.40	2 28.92	2 22 41.77
Sat.	29	2 24 0.41	14 18 7.5	15 54.16	2 37.91	2 26 38.32
Sun.	30	2 27 48.49	14 36 46.1	15 53.92	2 46.39	2 30 34.87
Mon.	31	2 31 37.08	N. 14 55 10.3	15 53.68	2 54.35	2 34 31.43

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
				<sup>h</sup> <sup>m</sup> <sup>s</sup>				
1	10 58 40.0	S. 0.54	9.9998192	23 19 55.19	15 14.59	15 19.01	55 50.81	56 7.02
2	11 57 50.7	0.63	9.9999419	23 15 59.28	15 23.73	15 28.73	56 24.31	56 42.64
3	12 56 59.1	0.68	0.0000643	23 12 3.37	15 34.01	15 39.53	57 1.97	57 22.21
4	13 56 5.2	0.69	0.0001863	23 8 7.47	15 45.27	15 51.16	57 43.22	58 4.80
5	14 55 9.0	0.67	.0003081	23 4 11.56	15 57.12	16 3.10	58 26.69	58 48.60
6	15 54 10.4	0.63	.0004298	23 0 15.66	16 8.98	16 14.64	59 10.11	59 30.84
7	16 53 9.4	0.56	0.0005515	22 56 19.75	16 19.92	16 24.71	59 50.23	60 7.76
8	17 52 6.2	0.45	.0006733	22 52 23.84	16 28.84	16 32.18	60 22.91	60 35.14
9	18 51 0.7	0.32	.0007952	22 48 27.94	16 34.59	16 35.96	60 43.97	60 48.98
10	19 49 53.1	0.19	0.0009175	22 44 32.03	16 36.21	16 35.29	60 49.89	60 46.52
11	20 48 43.3	S. 0.05	.0010401	22 40 36.12	16 33.20	16 29.97	60 38.85	60 27.04
12	21 47 31.5	N. 0.08	.0011629	22 36 40.22	16 25.70	16 20.48	60 11.38	59 52.27
13	22 46 17.7	0.21	0.0012861	22 32 44.31	16 14.47	16 7.82	59 30.22	59 5.87
14	23 45 2.1	0.32	.0014093	22 28 48.40	16 0.71	15 53.31	58 39.81	58 12.70
15	24 43 44.7	0.40	.0015326	22 24 52.50	15 45.80	15 38.32	57 45.16	57 17.78
16	25 42 25.6	0.45	0.0016558	22 20 56.59	15 31.03	15 24.05	56 51.07	56 25.51
17	26 41 4.7	0.48	.0017788	22 17 0.68	15 17.49	15 11.44	56 1.45	55 39.28
18	27 39 42.2	0.47	.0019013	22 13 4.78	15 5.96	15 1.10	55 19.18	55 1.38
19	28 38 18.0	0.43	0.0020233	22 9 8.87	14 56.90	14 53.37	54 45.99	54 33.08
20	29 36 52.2	0.36	.0021445	22 5 12.96	14 50.54	14 48.39	54 22.71	54 14.84
21	30 35 24.7	0.28	.0022649	22 1 17.06	14 46.91	14 46.09	54 9.43	54 6.41
22	31 33 55.5	0.18	0.0023843	21 57 21.15	14 45.88	14 46.26	54 5.65	54 7.04
23	32 32 24.7	N. 0.06	.0025027	21 53 25.24	14 47.19	14 48.62	54 10.43	54 15.67
24	33 30 52.1	S. 0.07	.0026199	21 49 29.33	14 50.50	14 52.79	54 22.57	54 30.97
25	34 29 17.8	0.20	0.0027358	21 45 33.43	14 55.44	14 58.41	54 40.67	54 51.53
26	35 27 41.8	0.32	.0028503	21 41 37.52	15 1.63	15 5.08	55 3.35	55 15.97
27	36 26 4.0	0.44	.0029634	21 37 41.61	15 8.71	15 12.48	55 29.25	55 43.07
28	37 24 24.3	0.55	0.0030750	21 33 45.70	15 16.35	15 20.33	55 57.29	56 11.85
29	38 22 42.8	0.63	.0031851	21 29 49.80	15 24.36	15 28.45	56 26.64	56 41.62
30	39 20 59.4	0.70	.0032937	21 25 53.89	15 32.57	15 36.74	56 56.72	57 11.96
31	40 19 14.0	S. 0.73	0.0034009	21 21 57.98	15 40.91	15 45.09	57 27.25	57 42.57

## MEAN TIME.

Day.	THE MOON'S						
	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	55° 31' 7.8	61° 51' 39.1	S. 3° 51' 54.8	S. 4° 14' 29.0	d 3.96	h m 3 6.5	h m 15 31.5
2	68 15 57.0	74 44 17.0	4 34 6.4	4 50 27.4	4.96	3 57.1	16 23.1
3	81 16 54.5	87 54 3.6	5 3 13.7	5 12 8.3	5.96	4 49.6	17 16.5
4	94 35 57.0	101 22 45.2	5 16 56.4	5 17 24.9	6.96	5 43.8	18 11.2
5	108 14 35.4	115 11 30.9	5 13 24.0	5 4 47.0	7.96	6 38.9	19 6.6
6	122 13 30.1	129 20 25.5	4 51 31.3	4 33 39.3	8.96	7 34.4	20 2.1
7	136 32 3.0	143 48 1.4	4 11 18.7	3 44 43.2	9.96	8 29.8	20 57.5
8	151 7 51.9	158 30 57.8	3 14 13.4	2 40 16.4	10.96	9 25.0	21 52.6
9	165 56 35.4	173 23 54.5	2 3 25.7	1 24 20.6	11.96	10 20.1	22 47.6
10	180 52 0.3	188 19 53.5	S. 0 43 45.1	S. 0 2 26.3	12.96	11 15.2	23 42.8
11	195 46 34.2	203 11 2.5	N. 0 38 47.7	N. 1 19 8.9	13.96	12 10.5	* *
12	210 32 21.7	217 49 39.3	1 57 52.5	2 34 17.7	14.96	13 6.1	0 38.3
13	225 2 9.7	232 9 14.4	3 7 49.3	3 37 58.5	15.96	14 1.8	1 34.0
14	239 10 24.0	246 5 18.1	4 4 23.2	4 26 47.8	16.96	14 57.1	2 29.5
15	252 53 45.3	259 35 43.1	4 45 3.2	4 59 5.3	17.96	15 51.2	3 24.3
16	266 11 17.1	272 40 39.9	5 8 54.8	5 14 36.3	18.96	16 43.7	4 17.7
17	279 4 10.7	285 22 13.7	5 16 17.0	5 14 6.2	19.96	17 34.0	5 9.1
18	291 35 17.3	297 43 53.1	5 8 14.8	4 58 54.7	20.96	18 22.1	5 58.3
19	303 48 35.2	309 49 58.6	4 46 18.3	4 30 38.7	21.96	19 8.0	6 45.3
20	315 48 39.6	321 45 14.5	4 12 8.9	3 51 2.6	22.96	19 52.3	7 30.3
21	327 40 19.1	333 34 28.4	3 27 33.3	3 1 55.2	23.96	20 35.3	8 13.9
22	339 28 16.0	345 22 14.1	2 34 22.7	2 5 11.3	24.96	21 17.9	8 56.6
23	351 16 52.6	357 12 39.8	1 34 36.7	N. 1 2 56.1	25.96	22 0.4	9 39.1
24	3 10 0.9	9 9 18.9	N. 0 30 27.1	S. 0 2 31.3	26.96	22 43.7	10 22.0
25	15 10 54.5	21 15 5.1	S. 0 35 38.9	1 8 34.6	27.96	23 28.3	11 5.8
26	27 22 5.6	33 32 8.2	1 40 56.4	2 12 21.7	28.96	* *	11 51.2
27	39 45 22.3	46 1 55.2	2 42 26.9	3 10 48.6	0.29	0 14.6	12 38.6
28	52 21 51.5	58 45 13.8	3 37 3.4	4 0 48.5	1.29	1 3.0	13 28.1
29	65 12 3.4	71 42 19.8	4 21 41.9	4 39 23.2	2.29	1 53.6	14 19.7
30	78 16 1.7	84 53 6.7	4 53 33.6	5 3 56.6	3.29	2 46.1	15 12.9
31	91 33 32.5	98 17 16.0	S. 5 10 18.2	S. 5 12 27.6	4.29	3 40.0	16 7.3

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SATURDAY 1.</b>					<b>MONDAY 3.</b>				
	h m s	s	N. <sup>o</sup> ' "	"		h m s	s	N. <sup>o</sup> ' "	"
0	3 36 32.73	21.493	N. 15 23 27.6	54.18	0	5 23 26.21	22.984	N. 18 7 0.8	11.74
1	3 38 41.78	21.526	15 28 50.5	53.44	1	5 25 44.19	23.010	18 8 8.2	10.73
2	3 40 51.04	21.560	15 34 8.9	52.69	2	5 28 2.33	23.037	18 9 9.6	9.72
3	3 43 0.50	21.593	15 39 22.8	51.94	3	5 30 20.63	23.062	18 10 4.8	8.69
4	3 45 10.16	21.627	15 44 32.2	51.18	4	5 32 39.07	23.086	18 10 53.9	7.67
5	3 47 20.02	21.660	15 49 37.0	50.41	5	5 34 57.66	23.111	18 11 36.8	6.64
6	3 49 30.08	21.694	15 54 37.1	49.64	6	5 37 16.40	23.135	18 12 13.6	5.61
7	3 51 40.35	21.728	15 59 32.7	48.87	7	5 39 35.28	23.159	18 12 44.1	4.57
8	3 53 50.82	21.761	16 4 23.5	48.08	8	5 41 54.31	23.183	18 13 8.4	3.53
9	3 56 1.48	21.794	16 9 9.6	47.28	9	5 44 13.48	23.206	18 13 26.5	2.49
10	3 58 12.35	21.828	16 13 50.9	46.48	10	5 46 32.78	23.228	18 13 38.3	1.44
11	4 0 23.41	21.861	16 18 27.4	45.68	11	5 48 52.22	23.252	18 13 43.8	0.39
12	4 2 34.68	21.894	16 22 59.0	44.87	12	5 51 11.80	23.274	18 13 43.1	0.66
13	4 4 46.14	21.927	16 27 25.8	44.05	13	5 53 31.51	23.295	18 13 35.9	1.72
14	4 6 57.80	21.960	16 31 47.6	43.22	14	5 55 51.34	23.317	18 13 22.5	2.77
15	4 9 9.66	21.993	16 36 4.4	42.39	15	5 58 11.31	23.338	18 13 2.7	3.83
16	4 11 21.72	22.026	16 40 16.3	41.56	16	6 0 31.40	23.358	18 12 36.5	4.90
17	4 13 33.97	22.058	16 44 23.1	40.71	17	6 2 51.61	23.379	18 12 3.9	5.97
18	4 15 46.42	22.092	16 48 24.8	39.86	18	6 5 11.95	23.399	18 11 24.9	7.03
19	4 17 59.07	22.124	16 52 21.4	39.00	19	6 7 32.40	23.418	18 10 39.5	8.10
20	4 20 11.91	22.156	16 56 12.8	38.14	20	6 9 52.97	23.438	18 9 47.7	9.17
21	4 22 24.94	22.188	16 59 59.1	37.27	21	6 12 13.66	23.457	18 8 49.5	10.25
22	4 24 38.17	22.221	17 3 40.1	36.39	22	6 14 34.46	23.475	18 7 44.7	11.33
23	4 26 51.59	22.253	N. 17 7 15.8	35.52	23	6 16 55.36	23.493	N. 18 6 33.5	12.40
<b>SUNDAY 2.</b>					<b>TUESDAY 4.</b>				
	h m s	s	N. <sup>o</sup> ' "	"		h m s	s	N. <sup>o</sup> ' "	"
0	4 29 5.20	22.284	N. 17 10 46.3	34.63	0	6 19 16.38	23.512	N. 18 5 15.9	13.48
1	4 31 19.00	22.316	17 14 11.4	33.74	1	6 21 37.50	23.528	18 3 51.7	14.57
2	4 33 32.99	22.347	17 17 31.2	32.84	2	6 23 58.72	23.545	18 2 21.1	15.65
3	4 35 47.16	22.378	17 20 45.5	31.93	3	6 26 20.04	23.562	18 0 43.9	16.73
4	4 38 1.53	22.410	17 23 54.4	31.03	4	6 28 41.46	23.578	17 59 0.3	17.82
5	4 40 16.08	22.441	17 26 57.9	30.12	5	6 31 2.98	23.594	17 57 10.1	18.91
6	4 42 30.82	22.472	17 29 55.8	29.19	6	6 33 24.59	23.609	17 55 13.4	20.00
7	4 44 45.74	22.503	17 32 48.2	28.27	7	6 35 46.29	23.624	17 53 10.1	21.09
8	4 47 0.85	22.533	17 35 35.0	27.33	8	6 38 8.08	23.639	17 51 0.3	22.18
9	4 49 16.13	22.563	17 38 16.2	26.40	9	6 40 29.96	23.653	17 48 44.0	23.26
10	4 51 31.60	22.593	17 40 51.8	25.46	10	6 42 51.92	23.667	17 46 21.2	24.35
11	4 53 47.24	22.622	17 43 21.7	24.51	11	6 45 13.96	23.680	17 43 51.8	25.44
12	4 56 3.06	22.652	17 45 45.9	23.56	12	6 47 36.08	23.693	17 41 15.9	26.53
13	4 58 19.06	22.681	17 48 4.4	22.60	13	6 49 58.28	23.706	17 38 33.4	27.63
14	5 0 35.23	22.710	17 50 17.1	21.63	14	6 52 20.55	23.718	17 35 44.3	28.73
15	5 2 51.58	22.739	17 52 24.0	20.67	15	6 54 42.90	23.730	17 32 48.7	29.81
16	5 5 8.10	22.767	17 54 25.1	19.69	16	6 57 5.31	23.741	17 29 46.6	30.89
17	5 7 24.78	22.795	17 56 20.3	18.72	17	6 59 27.79	23.753	17 26 38.0	31.98
18	5 9 41.64	22.823	17 58 9.7	17.73	18	7 1 50.34	23.763	17 23 22.8	33.08
19	5 11 58.66	22.851	17 59 53.1	16.74	19	7 4 12.95	23.773	17 20 1.0	34.17
20	5 14 15.85	22.878	18 1 30.6	15.76	20	7 6 35.62	23.783	17 16 32.8	35.25
21	5 16 33.20	22.905	18 3 2.2	14.76	21	7 8 58.35	23.793	17 12 58.0	36.34
22	5 18 50.71	22.932	18 4 27.7	13.76	22	7 11 21.14	23.803	17 9 16.7	37.43
23	5 21 8.38	22.958	18 5 47.3	12.76	23	7 13 43.98	23.812	17 5 28.9	38.51
24	5 23 26.21	22.984	N. 18 7 0.8	11.74	24	7 16 6.88	23.820	N. 17 1 34.6	39.59



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 5.</b>					<b>FRIDAY 7.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	7 16 6.88	23.820	N. 17 1 34.6	39.59	0	9 10 49.60	23.883	N. 11 53 14.0	86.89
1	7 18 29.82	23.828	16 57 33.8	40.67	1	9 13 12.89	23.879	11 44 30.1	87.73
2	7 20 52.81	23.835	16 53 26.6	41.75	2	9 15 36.15	23.876	11 35 41.2	88.55
3	7 23 15.84	23.843	16 49 12.8	42.83	3	9 17 59.40	23.873	11 26 47.5	89.35
4	7 25 38.92	23.850	16 44 52.6	43.90	4	9 20 22.62	23.868	11 17 49.0	90.16
5	7 28 2.04	23.857	16 40 26.0	44.98	5	9 22 45.82	23.865	11 8 45.6	90.96
6	7 30 25.20	23.863	16 35 52.9	46.04	6	9 25 9.00	23.862	10 59 37.5	91.73
7	7 32 48.39	23.868	16 31 13.5	47.11	7	9 27 32.16	23.858	10 50 24.8	92.51
8	7 35 11.62	23.874	16 26 27.6	48.18	8	9 29 55.30	23.854	10 41 7.4	93.28
9	7 37 34.88	23.880	16 21 35.3	49.24	9	9 32 18.41	23.850	10 31 45.5	94.03
10	7 39 58.18	23.885	16 16 36.7	50.29	10	9 34 41.50	23.846	10 22 19.1	94.78
11	7 42 21.50	23.889	16 11 31.8	51.35	11	9 37 4.56	23.842	10 12 48.2	95.51
12	7 44 44.85	23.893	16 6 20.5	52.41	12	9 39 27.60	23.838	10 3 13.0	96.23
13	7 47 8.22	23.898	16 1 2.9	53.46	13	9 41 50.62	23.835	9 53 33.5	96.94
14	7 49 31.62	23.902	15 55 39.0	54.50	14	9 44 13.62	23.831	9 43 49.7	97.65
15	7 51 55.04	23.904	15 50 8.9	55.54	15	9 46 36.59	23.826	9 34 1.7	98.35
16	7 54 18.47	23.908	15 44 32.5	56.58	16	9 48 59.53	23.823	9 24 9.5	99.03
17	7 56 41.93	23.911	15 38 49.9	57.62	17	9 51 22.46	23.819	9 14 13.3	99.69
18	7 59 5.40	23.913	15 33 1.1	58.65	18	9 53 45.36	23.815	9 4 13.2	100.35
19	8 1 28.88	23.915	15 27 6.1	59.68	19	9 56 8.24	23.811	8 54 9.1	101.01
20	8 3 52.38	23.918	15 21 5.0	60.70	20	9 58 31.09	23.807	8 44 1.1	101.65
21	8 6 15.89	23.919	15 14 57.7	61.72	21	10 0 53.92	23.803	8 33 49.3	102.28
22	8 8 39.41	23.920	15 8 44.4	62.72	22	10 3 16.73	23.800	8 23 33.8	102.89
23	8 11 2.93	23.921	N. 15 2 25.1	63.73	23	10 5 39.52	23.796	N. 8 13 14.6	103.50
<b>THURSDAY 6.</b>					<b>SATURDAY 8.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	8 13 26.46	23.923	N. 14 55 59.6	64.74	0	10 8 2.28	23.792	N. 8 2 51.8	104.09
1	8 15 50.00	23.923	14 49 28.2	65.73	1	10 10 25.02	23.789	7 52 25.5	104.67
2	8 18 13.53	23.923	14 42 50.8	66.73	2	10 12 47.75	23.786	7 41 55.7	105.24
3	8 20 37.07	23.923	14 36 7.5	67.71	3	10 15 10.45	23.782	7 31 22.6	105.80
4	8 23 0.61	23.923	14 29 18.3	68.69	4	10 17 33.13	23.778	7 20 46.1	106.35
5	8 25 24.15	23.923	14 22 23.2	69.67	5	10 19 55.79	23.775	7 10 6.4	106.88
6	8 27 47.69	23.923	14 15 22.3	70.63	6	10 22 18.43	23.772	6 59 23.5	107.40
7	8 30 11.22	23.921	14 8 15.6	71.60	7	10 24 41.05	23.769	6 48 37.6	107.91
8	8 32 34.74	23.920	14 1 3.1	72.55	8	10 27 3.66	23.766	6 37 48.6	108.41
9	8 34 58.26	23.919	13 53 45.0	73.50	9	10 29 26.24	23.763	6 26 56.7	108.89
10	8 37 21.77	23.918	13 46 21.1	74.45	10	10 31 48.81	23.760	6 16 1.9	109.37
11	8 39 45.28	23.917	13 38 51.6	75.38	11	10 34 11.36	23.758	6 5 4.3	109.83
12	8 42 8.77	23.915	13 31 16.5	76.32	12	10 36 33.90	23.755	5 54 4.0	110.27
13	8 44 32.26	23.913	13 23 35.8	77.24	13	10 38 56.42	23.753	5 43 1.1	110.70
14	8 46 55.73	23.910	13 15 49.6	78.16	14	10 41 18.93	23.750	5 31 55.6	111.12
15	8 49 19.18	23.908	13 7 57.9	79.07	15	10 43 41.42	23.748	5 20 47.7	111.53
16	8 51 42.63	23.907	13 0 0.8	79.97	16	10 46 3.90	23.746	5 9 37.3	111.92
17	8 54 6.06	23.903	12 51 58.3	80.86	17	10 48 26.37	23.743	4 58 24.6	112.30
18	8 56 29.47	23.901	12 43 50.5	81.74	18	10 50 48.82	23.741	4 47 9.7	112.67
19	8 58 52.87	23.899	12 35 37.4	82.63	19	10 53 11.26	23.740	4 35 52.6	113.03
20	9 1 16.26	23.896	12 27 19.0	83.50	20	10 55 33.70	23.738	4 24 33.4	113.37
21	9 3 39.62	23.893	12 18 55.4	84.36	21	10 57 56.12	23.737	4 13 12.2	113.7
22	9 6 2.97	23.889	12 10 26.7	85.22	22	11 0 18.54	23.735	4 1 49.1	114.6
23	9 8 26.29	23.886	12 1 52.8	86.06	23	11 2 40.94	23.733	3 50 24.2	115.68
24	9 10 49.60	23.883	N. 11 53 14.0	86.89	24	11 5 3.34	23.733	N. 3 38 57.5	116.1

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 9.</b>					<b>TUESDAY 11.</b>				
	h m s	s				h m s	s		
0	11 5 3.34	23.733	N. 3 38' 57".5	114.59	0	12 59 7.49	23.844	S. 5 36' 49".4	111.43
1	11 7 25.74	23.732	3 27 29.1	114.86	1	13 1 30.57	23.849	5 47 56.7	111.01
2	11 9 48.12	23.731	3 15 59.2	115.12	2	13 3 53.68	23.854	5 59 1.5	110.58
3	11 12 10.51	23.731	3 4 27.7	115.37	3	13 6 16.82	23.859	6 10 3.7	110.14
4	11 14 32.89	23.730	2 52 54.8	115.59	4	13 8 39.99	23.863	6 21 3.2	109.68
5	11 16 55.27	23.729	2 41 20.6	115.81	5	13 11 3.18	23.868	6 31 59.9	109.21
6	11 19 17.64	23.729	2 29 45.1	116.01	6	13 13 26.41	23.874	6 42 53.7	108.73
7	11 21 40.02	23.730	2 18 8.5	116.20	7	13 15 49.67	23.878	6 53 44.6	108.23
8	11 24 2.40	23.729	2 6 30.7	116.37	8	13 18 12.95	23.883	7 4 32.5	107.72
9	11 26 24.77	23.729	1 54 52.0	116.53	9	13 20 36.27	23.888	7 15 17.2	107.19
10	11 28 47.15	23.731	1 43 12.4	116.68	10	13 22 59.61	23.893	7 25 58.8	106.66
11	11 31 9.54	23.732	1 31 31.9	116.81	11	13 25 22.99	23.898	7 36 37.1	106.11
12	11 33 31.93	23.732	1 19 50.7	116.93	12	13 27 46.39	23.903	7 47 12.1	105.55
13	11 35 54.32	23.733	1 8 8.8	117.03	13	13 30 9.82	23.908	7 57 43.7	104.97
14	11 38 16.72	23.733	0 56 26.4	117.11	14	13 32 33.28	23.913	8 8 11.8	104.38
15	11 40 39.12	23.734	0 44 43.5	117.18	15	13 34 56.77	23.917	8 18 36.3	103.78
16	11 43 1.53	23.736	0 33 0.2	117.25	16	13 37 20.28	23.922	8 28 57.2	103.17
17	11 45 23.95	23.738	0 21 16.5	117.29	17	13 39 43.83	23.927	8 39 14.4	102.55
18	11 47 46.38	23.739	N. 0 9 32.7	117.31	18	13 42 7.40	23.931	8 49 27.8	101.92
19	11 50 8.82	23.741	S. 0 2 11.2	117.33	19	13 44 31.00	23.935	8 59 37.4	101.27
20	11 52 31.27	23.743	0 13 55.2	117.33	20	13 46 54.62	23.939	9 9 43.0	100.61
21	11 54 53.74	23.746	0 25 39.2	117.32	21	13 49 18.27	23.943	9 19 44.7	99.93
22	11 57 16.22	23.748	0 37 23.0	117.28	22	13 51 41.94	23.948	9 29 42.2	99.24
23	11 59 38.71	23.749	S. 0 49 6.6	117.24	23	13 54 5.64	23.952	S. 9 39 35.6	98.56
<b>MONDAY 10.</b>					<b>WEDNESDAY 12.</b>				
0	12 2 1.21	23.751	S. 1 0 49.9	117.18	0	13 56 29.36	23.955	S. 9 49 24.9	97.86
1	12 4 23.72	23.754	1 12 32.8	117.11	1	13 58 53.10	23.958	9 59 9.9	97.13
2	12 6 46.26	23.758	1 24 15.2	117.02	2	14 1 16.86	23.963	10 8 50.5	96.40
3	12 9 8.81	23.760	1 35 57.0	116.92	3	14 3 40.65	23.966	10 18 26.7	95.67
4	12 11 31.38	23.763	1 47 38.2	116.80	4	14 6 4.45	23.969	10 27 58.5	94.92
5	12 13 53.97	23.766	1 59 18.6	116.67	5	14 8 28.28	23.973	10 37 25.7	94.16
6	12 16 16.57	23.769	2 10 58.2	116.53	6	14 10 52.12	23.975	10 46 48.4	93.39
7	12 18 39.20	23.773	2 22 36.9	116.37	7	14 13 15.98	23.978	10 56 6.4	92.61
8	12 21 1.85	23.777	2 34 14.6	116.18	8	14 15 39.85	23.980	11 5 19.7	91.82
9	12 23 24.52	23.780	2 45 51.1	115.99	9	14 18 3.74	23.983	11 14 28.2	91.02
10	12 25 47.21	23.783	2 57 26.5	115.79	10	14 20 27.65	23.985	11 23 31.9	90.20
11	12 28 9.92	23.787	3 9 0.6	115.58	11	14 22 51.56	23.987	11 32 30.6	89.38
12	12 30 32.65	23.791	3 20 33.4	115.34	12	14 25 15.49	23.989	11 41 24.5	88.56
13	12 32 55.41	23.796	3 32 4.7	115.09	13	14 27 39.43	23.991	11 50 13.3	87.71
14	12 35 18.20	23.800	3 43 34.5	114.83	14	14 30 3.38	23.992	11 58 57.0	86.87
15	12 37 41.01	23.803	3 55 2.7	114.55	15	14 32 27.33	23.993	12 7 35.7	86.02
16	12 40 3.84	23.808	4 6 29.1	114.26	16	14 34 51.29	23.994	12 16 9.2	85.14
17	12 42 26.70	23.813	4 17 53.8	113.96	17	14 37 15.26	23.994	12 24 37.4	84.27
18	12 44 49.59	23.818	4 29 16.6	113.64	18	14 39 39.22	23.994	12 33 0.4	83.38
19	12 47 12.51	23.822	4 40 37.5	113.30	19	14 42 3.19	23.995	12 41 18.0	82.49
20	12 49 35.45	23.826	4 51 56.3	112.95	20	14 44 27.16	23.994	12 49 30.3	81.60
21	12 51 58.42	23.830	5 3 12.9	112.59	21	14 46 51.12	23.994	12 57 37.2	80.68
22	12 54 21.41	23.835	5 14 27.4	112.22	22	14 49 15.09	23.993	13 5 38.5	79.77
23	12 56 44.44	23.840	5 25 39.6	111.83	23	14 51 39.04	23.992	13 13 34.4	78.85
24	1 59 7.49	23.844	S. 5 36 49.4	111.43	24	14 54 2.99	23.991	S. 13 21 24.7	77.92

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 13.</b>					<b>SATURDAY 15.</b>				
	<b>h m s</b>	<b>s</b>	<b>S. 13 21 24.7</b>	<b>77.92</b>		<b>h m s</b>	<b>s</b>	<b>S. 17 38 18.6</b>	<b>27.97</b>
0	14 54 2.99	23.991	13 29 9.4	76.98	0	16 48 21.10	23.478	17 41 3.1	26.88
1	14 56 26.93	23.988	13 36 48.5	76.03	1	16 50 41.91	23.458	17 43 41.2	25.81
2	14 58 50.85	23.987	13 44 21.8	75.08	2	16 53 2.59	23.436	17 46 12.8	24.73
3	15 1 14.77	23.985	13 51 49.4	74.13	3	16 55 23.14	23.414	17 48 38.0	23.66
4	15 3 38.67	23.983	13 59 11.3	73.16	4	16 57 43.56	23.392	17 50 56.7	22.58
5	15 6 2.56	23.979	14 6 27.3	72.18	5	17 0 3.84	23.368	17 53 8.9	21.51
6	15 8 26.42	23.975	14 13 37.5	71.21	6	17 2 23.98	23.346	17 55 14.8	20.44
7	15 10 50.26	23.972	14 20 41.8	70.23	7	17 4 43.99	23.323	17 57 14.2	19.37
8	15 13 14.08	23.968	14 27 40.2	69.24	8	17 7 3.85	23.298	17 59 7.2	18.30
9	15 15 37.88	23.964	14 34 32.7	68.24	9	17 9 23.57	23.275	18 0 53.8	17.23
10	15 18 1.65	23.959	14 41 19.1	67.23	10	17 11 43.15	23.250	18 2 34.0	16.18
11	15 20 25.39	23.953	14 47 59.5	66.23	11	17 14 2.57	23.224	18 4 7.9	15.12
12	15 22 49.09	23.948	14 54 33.9	65.22	12	17 16 21.84	23.199	18 5 35.4	14.06
13	15 25 12.77	23.943	15 1 2.1	64.20	13	17 18 40.96	23.174	18 6 56.6	13.00
14	15 27 36.40	23.936	15 7 24.3	63.18	14	17 20 59.93	23.148	18 8 11.4	11.95
15	15 30 0.00	23.930	15 13 40.3	62.16	15	17 23 18.73	23.121	18 9 20.0	10.90
16	15 32 23.56	23.923	15 19 50.2	61.13	16	17 25 37.38	23.094	18 10 22.2	9.85
17	15 34 47.08	23.916	15 25 53.8	60.09	17	17 27 55.86	23.067	18 11 18.2	8.82
18	15 37 10.55	23.908	15 31 51.3	59.06	18	17 30 14.18	23.039	18 12 8.0	7.78
19	15 39 33.97	23.900	15 37 42.5	58.01	19	17 32 32.33	23.011	18 12 51.5	6.73
20	15 41 57.35	23.892	15 43 27.4	56.97	20	17 34 50.31	22.983	18 13 28.8	5.70
21	15 44 20.67	23.882	15 49 6.1	55.92	21	17 37 8.13	22.955	18 13 59.9	4.68
22	15 46 43.93	23.873	15 54 38.4	54.86	22	17 39 25.77	22.925	18 14 24.9	3.65
23	15 49 7.14	23.863			23	17 41 43.23	22.896		
<b>FRIDAY 14.</b>					<b>SUNDAY 16.</b>				
	<b>h m s</b>	<b>s</b>	<b>S. 16 0 4.4</b>	<b>53.81</b>		<b>h m s</b>	<b>s</b>	<b>S. 18 14 43.7</b>	<b>2.63</b>
0	15 51 30.29	23.853	16 5 24.1	52.75	0	17 44 0.52	22.868	18 14 56.4	1.60
1	15 53 53.37	23.842	16 10 37.4	51.68	1	17 46 17.64	22.838	18 15 2.9	0.58
2	15 56 16.39	23.832	16 15 44.3	50.62	2	17 48 34.57	22.807	18 15 3.4	0.42
3	15 58 39.35	23.820	16 20 44.8	49.56	3	17 50 51.32	22.776	18 14 57.9	1.43
4	16 1 2.23	23.808	16 25 39.0	48.49	4	17 53 7.88	22.745	18 14 46.3	2.43
5	16 3 25.04	23.795	16 30 26.7	47.41	5	17 55 24.26	22.715	18 14 28.7	3.43
6	16 5 47.77	23.782	16 35 7.9	46.33	6	17 57 40.46	22.683	18 14 5.2	4.42
7	16 8 10.42	23.769	16 39 42.7	45.27	7	17 59 56.46	22.652	18 13 35.7	5.42
8	16 10 33.00	23.756	16 44 11.1	44.19	8	18 2 12.28	22.620	18 13 0.2	6.40
9	16 12 55.49	23.742	16 48 33.0	43.12	9	18 4 27.90	22.588	18 12 18.9	7.38
10	16 15 17.90	23.728	16 52 48.5	42.03	10	18 6 43.33	22.556	18 11 31.7	8.35
11	16 17 40.22	23.712	16 56 57.4	40.95	11	18 8 58.57	22.523	18 10 38.7	9.33
12	16 20 2.44	23.697	17 0 59.9	39.88	12	18 11 13.61	22.490	18 9 39.8	10.29
13	16 22 24.58	23.681	17 4 55.9	38.79	13	18 13 28.45	22.458	18 8 35.2	11.25
14	16 24 46.61	23.664	17 8 45.4	37.71	14	18 15 43.10	22.424	18 7 24.8	12.21
15	16 27 8.55	23.648	17 12 28.4	36.63	15	18 17 57.54	22.390	18 6 8.7	13.16
16	16 29 30.39	23.631	17 16 4.9	35.54	16	18 20 11.78	22.357	18 4 46.9	14.10
17	16 31 52.12	23.613	17 19 34.9	34.46	17	18 22 25.82	22.323	18 3 19.5	15.04
18	16 34 13.74	23.595	17 22 58.4	33.38	18	18 24 39.66	22.290	18 1 46.4	15.98
19	16 36 35.26	23.577	17 26 15.5	32.30	19	18 26 53.30	22.256	18 0 7.7	16.92
20	16 38 56.66	23.558	17 29 26.0	31.21	20	18 29 6.73	22.221	17 58 23.4	17.84
21	16 41 17.95	23.538	17 32 30.0	30.13	21	18 31 19.95	22.187	17 56 33.6	18.76
22	16 43 39.12	23.518	17 35 27.5	29.05	22	18 33 32.97	22.153	17 54 38.3	19.68
23	16 46 0.17	23.498			23	18 35 45.78	22.118		
24	16 48 21.10	23.478	S. 17 38 18.6	27.97	24	18 37 58.38	22.083	S. 17 52 37.5	20.60

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 17.</b>					<b>WEDNESDAY 19.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	18 37 58.38	22.083	S. 17 52 37.5	20.59	0	20 19 53.32	20.405	S. 14 39 49.7	57.48
1	18 40 10.77	22.048	17 50 31.2	21.49	1	20 21 55.65	20.373	14 34 2.9	58.11
2	18 42 22.95	22.012	17 48 19.6	22.39	2	20 23 57.80	20.342	14 28 12.4	58.73
3	18 44 34.91	21.977	17 46 2.5	23.28	3	20 25 59.75	20.309	14 22 18.2	59.34
4	18 46 46.67	21.943	17 43 40.2	24.17	4	20 28 1.51	20.278	14 16 20.3	59.95
5	18 48 58.22	21.907	17 41 12.5	25.06	5	20 30 3.09	20.248	14 10 18.8	60.55
6	18 51 9.55	21.871	17 38 39.5	25.93	6	20 32 4.48	20.216	14 4 13.7	61.14
7	18 53 20.67	21.835	17 36 1.3	26.81	7	20 34 5.68	20.185	13 58 5.1	61.73
8	18 55 31.57	21.799	17 33 17.8	27.68	8	20 36 6.70	20.155	13 51 52.9	62.32
9	18 57 42.26	21.764	17 30 29.2	28.53	9	20 38 7.54	20.126	13 45 37.3	62.89
10	18 59 52.74	21.728	17 27 35.5	29.38	10	20 40 8.20	20.095	13 39 18.2	63.47
11	19 2 3.00	21.693	17 24 36.6	30.23	11	20 42 8.68	20.065	13 32 55.7	64.03
12	19 4 13.05	21.657	17 21 32.7	31.08	12	20 44 8.98	20.036	13 26 29.8	64.60
13	19 6 22.88	21.620	17 18 23.7	31.92	13	20 46 9.11	20.007	13 20 0.5	65.15
14	19 8 32.49	21.584	17 15 9.7	32.74	14	20 48 9.06	19.978	13 13 28.0	65.69
15	19 10 41.89	21.549	17 11 50.8	33.57	15	20 50 8.85	19.950	13 6 52.2	66.24
16	19 12 51.08	21.513	17 8 26.9	34.39	16	20 52 8.46	19.921	13 0 13.1	66.78
17	19 15 0.05	21.477	17 4 58.1	35.20	17	20 54 7.90	19.893	12 53 30.8	67.31
18	19 17 8.80	21.441	17 1 24.5	36.01	18	20 56 7.18	19.866	12 46 45.4	67.84
19	19 19 17.34	21.405	16 57 46.0	36.82	19	20 58 6.29	19.838	12 39 56.7	68.37
20	19 21 25.66	21.369	16 54 2.7	37.61	20	21 0 5.24	19.811	12 33 5.0	68.88
21	19 23 33.77	21.334	16 50 14.7	38.39	21	21 2 4.02	19.784	12 26 10.2	69.38
22	19 25 41.67	21.298	16 46 22.0	39.18	22	21 4 2.65	19.758	12 19 12.4	69.89
23	19 27 49.35	21.263	S. 16 42 24.5	39.96	23	21 6 1.12	19.732	S. 12 12 11.5	70.39
<b>TUESDAY 18.</b>					<b>THURSDAY 20.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	19 29 56.82	21.227	S. 16 38 22.5	40.73	0	21 7 59.43	19.706	S. 12 5 7.7	70.88
1	19 32 4.07	21.191	16 34 15.8	41.50	1	21 9 57.59	19.681	11 58 0.9	71.38
2	19 34 11.11	21.155	16 30 4.5	42.27	2	21 11 55.60	19.655	11 50 51.2	71.86
3	19 36 17.93	21.120	16 25 48.6	43.02	3	21 13 53.45	19.630	11 43 38.6	72.34
4	19 38 24.55	21.085	16 21 28.3	43.76	4	21 15 51.16	19.606	11 36 23.1	72.81
5	19 40 30.95	21.049	16 17 3.5	44.50	5	21 17 48.72	19.582	11 29 4.9	73.28
6	19 42 37.14	21.014	16 12 34.3	45.24	6	21 19 46.14	19.558	11 21 43.8	73.73
7	19 44 43.12	20.979	16 8 0.6	45.98	7	21 21 43.41	19.534	11 14 20.1	74.18
8	19 46 48.89	20.944	16 3 22.6	46.70	8	21 23 40.55	19.511	11 6 53.6	74.64
9	19 48 54.45	20.909	15 58 40.2	47.42	9	21 25 37.54	19.488	10 59 24.4	75.09
10	19 50 59.80	20.874	15 53 53.6	48.13	10	21 27 34.40	19.466	10 51 52.5	75.53
11	19 53 4.94	20.840	15 49 2.7	48.83	11	21 29 31.13	19.444	10 44 18.1	75.96
12	19 55 9.88	20.806	15 44 7.6	49.53	12	21 31 27.73	19.422	10 36 41.0	76.39
13	19 57 14.61	20.772	15 39 8.3	50.23	13	21 33 24.19	19.400	10 29 1.4	76.81
14	19 59 19.14	20.738	15 34 4.8	50.92	14	21 35 20.53	19.379	10 21 19.3	77.23
15	20 1 23.46	20.703	15 28 57.2	51.60	15	21 37 16.74	19.358	10 13 34.7	77.64
16	20 3 27.58	20.669	15 23 45.6	52.28	16	21 39 12.83	19.338	10 5 47.6	78.05
17	20 5 31.49	20.636	15 18 29.9	52.95	17	21 41 8.80	19.318	9 57 58.1	78.45
18	20 7 35.21	20.602	15 13 10.2	53.62	18	21 43 4.65	19.298	9 50 6.2	78.84
19	20 9 38.72	20.568	15 7 46.5	54.28	19	21 45 0.38	19.279	9 42 12.0	79.23
20	20 11 42.03	20.536	15 2 18.9	54.93	20	21 46 56.00	19.261	9 34 15.4	79.63
21	20 13 45.15	20.503	14 56 47.3	55.58	21	21 48 51.51	19.243	9 26 16.5	80.01
22	20 15 48.07	20.470	14 51 11.9	56.22	22	21 50 46.91	19.224	9 18 15.3	80.38
23	20 17 50.79	20.438	14 45 32.7	56.85	23	21 52 42.20	19.206	9 10 11.9	80.75
24	20 19 53.32	20.405	S. 14 39 49.7	57.48	24	21 54 37.38	19.188	S. 9 2 6.3	81.12

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>FRIDAY 21.</b>					<b>SUNDAY 23.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 54 37.38	19.188	S. 9 2 6.3	81.12	0	23 25 28.75	18.825	S. 2 0 30.3	92.54
1	21 56 32.46	19.172	8 53 58.4	81.48	1	23 27 21.71	18.828	1 51 14.7	92.65
2	21 58 27.44	19.156	8 45 48.5	81.83	2	23 29 14.68	18.831	1 41 58.5	92.75
3	22 0 22.33	19.139	8 37 36.4	82.18	3	23 31 7.66	18.833	1 32 41.7	92.85
4	22 2 17.11	19.123	8 29 22.3	82.53	4	23 33 0.67	18.837	1 23 24.3	92.94
5	22 4 11.80	19.108	8 21 6.1	82.88	5	23 34 53.70	18.841	1 14 6.4	93.03
6	22 6 6.40	19.093	8 12 47.8	83.21	6	23 36 46.76	18.846	1 4 47.9	93.12
7	22 8 0.91	19.078	8 4 27.6	83.53	7	23 38 39.85	18.850	0 55 29.0	93.18
8	22 9 55.33	19.063	7 56 5.5	83.85	8	23 40 32.96	18.855	0 46 9.7	93.25
9	22 11 49.67	19.050	7 47 41.4	84.18	9	23 42 26.11	18.861	0 36 50.0	93.32
10	22 13 43.93	19.037	7 39 15.4	84.49	10	23 44 19.29	18.868	0 27 29.9	93.38
11	22 15 38.11	19.023	7 30 47.5	84.80	11	23 46 12.52	18.874	0 18 9.4	93.43
12	22 17 32.21	19.011	7 22 17.8	85.10	12	23 48 5.78	18.881	S. 0 8 48.7	93.48
13	22 19 26.24	18.998	7 13 46.3	85.39	13	23 49 59.09	18.888	N. 0 0 32.3	93.52
14	22 21 20.19	18.986	7 5 13.1	85.68	14	23 51 52.44	18.896	0 9 53.5	93.56
15	22 23 14.07	18.974	6 56 38.1	85.98	15	23 53 45.84	18.904	0 19 15.0	93.59
16	22 25 7.88	18.963	6 48 1.3	86.27	16	23 55 39.29	18.913	0 28 36.6	93.61
17	22 27 1.63	18.953	6 39 22.9	86.53	17	23 57 32.79	18.922	0 37 58.3	93.63
18	22 28 55.32	18.943	6 30 42.9	86.80	18	23 59 26.35	18.931	0 47 20.1	93.64
19	22 30 48.94	18.933	6 22 1.3	87.08	19	0 1 19.96	18.941	0 56 42.0	93.65
20	22 32 42.51	18.923	6 13 18.0	87.34	20	0 3 13.64	18.952	1 6 3.9	93.65
21	22 34 36.02	18.914	6 4 33.2	87.59	21	0 5 7.38	18.962	1 15 25.8	93.64
22	22 36 29.48	18.906	5 55 46.9	87.84	22	0 7 1.18	18.973	1 24 47.6	93.63
23	22 38 22.89	18.898	S. 5 46 59.1	88.09	23	0 8 55.05	18.984	N. 1 34 9.4	93.62
<b>SATURDAY 22.</b>					<b>MONDAY 24.</b>				
0	22 40 16.25	18.889	S. 5 38 9.8	88.33	0	0 10 48.99	18.996	N. 1 43 31.0	93.59
1	22 42 9.56	18.882	5 29 19.1	88.57	1	0 12 43.00	19.008	1 52 52.5	93.57
2	22 44 2.83	18.875	5 20 27.0	88.80	2	0 14 37.08	19.020	2 2 13.8	93.53
3	22 45 56.06	18.868	5 11 33.5	89.03	3	0 16 31.24	19.033	2 11 34.9	93.49
4	22 47 49.25	18.862	5 2 38.7	89.24	4	0 18 25.48	19.047	2 20 55.7	93.44
5	22 49 42.40	18.856	4 53 42.6	89.46	5	0 20 19.80	19.061	2 30 16.2	93.38
6	22 51 35.52	18.851	4 44 45.2	89.67	6	0 22 14.21	19.075	2 39 36.3	93.33
7	22 53 28.61	18.846	4 35 46.6	89.88	7	0 24 8.70	19.089	2 48 56.1	93.27
8	22 55 21.67	18.841	4 26 46.7	90.08	8	0 26 3.28	19.104	2 58 15.5	93.20
9	22 57 14.70	18.837	4 17 45.7	90.26	9	0 27 57.95	19.119	3 7 34.5	93.12
10	22 59 7.71	18.833	4 8 43.6	90.45	10	0 29 52.71	19.134	3 16 52.9	93.03
11	23 1 0.70	18.831	3 59 40.3	90.64	11	0 31 47.56	19.151	3 26 10.9	92.95
12	23 2 53.68	18.827	3 50 35.9	90.82	12	0 33 42.52	19.168	3 35 28.3	92.84
13	23 4 46.63	18.824	3 41 30.5	90.99	13	0 35 37.57	19.184	3 44 45.0	92.74
14	23 6 39.57	18.823	3 32 24.0	91.16	14	0 37 32.73	19.202	3 54 1.2	92.64
15	23 8 32.50	18.821	3 23 16.6	91.32	15	0 39 27.99	19.218	4 3 16.7	92.52
16	23 10 25.42	18.819	3 14 8.2	91.48	16	0 41 23.35	19.237	4 12 31.4	92.40
17	23 12 18.33	18.818	3 4 58.8	91.63	17	0 43 18.83	19.255	4 21 45.5	92.28
18	23 14 11.24	18.818	2 55 48.6	91.78	18	0 45 14.41	19.273	4 30 58.7	92.13
19	23 16 4.15	18.818	2 46 37.5	91.92	19	0 47 10.11	19.293	4 40 11.1	91.99
20	23 17 57.06	18.818	2 37 25.6	92.05	20	0 49 5.93	19.313	4 49 22.6	91.84
21	23 19 49.97	18.819	2 28 12.9	92.18	21	0 51 1.86	19.332	4 58 33.2	91.69
22	23 21 42.89	18.820	2 18 59.4	92.31	22	0 52 57.91	19.352	5 7 42.9	91.53
23	23 23 35.81	18.822	2 9 45.2	92.43	23	0 54 54.08	19.372	5 16 51.6	91.37
24	23 25 28.75	18.825	S. 2 0 30.3	92.54	24	0 56 50.37	19.393	N. 5 25 59.3	91.

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>TUESDAY 25.</b>					<b>THURSDAY 27.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	0 56 50.37	19.393	N. 5 25 59.3	91.19	0	2 32 54.27	20.734	N. 12 10 18.7	74.46
1	0 58 46.79	19.414	5 35 5.9	91.01	1	2 34 58.77	20.769	12 17 43.9	73.93
2	1 0 43.34	19.436	5 44 11.4	90.83	2	2 37 3.47	20.801	12 25 5.9	73.40
3	1 2 40.02	19.458	5 53 15.8	90.63	3	2 39 8.38	20.834	12 32 24.7	72.85
4	1 4 36.83	19.479	6 2 18.9	90.43	4	2 41 13.48	20.868	12 39 40.1	72.29
5	1 6 33.77	19.502	6 11 20.9	90.23	5	2 43 18.79	20.902	12 46 52.2	71.73
6	1 8 30.85	19.525	6 20 21.6	90.00	6	2 45 24.30	20.935	12 54 0.8	71.15
7	1 10 28.07	19.548	6 29 20.9	89.78	7	2 47 30.01	20.969	13 1 6.0	70.58
8	1 12 25.42	19.571	6 38 18.9	89.55	8	2 49 35.93	21.003	13 8 7.8	70.00
9	1 14 22.92	19.595	6 47 15.5	89.32	9	2 51 42.05	21.037	13 15 6.0	69.40
10	1 16 20.56	19.619	6 56 10.7	89.08	10	2 53 48.37	21.071	13 22 0.6	68.80
11	1 18 18.35	19.644	7 5 4.5	88.83	11	2 55 54.90	21.106	13 28 51.6	68.19
12	1 20 16.29	19.668	7 13 56.7	88.57	12	2 58 1.64	21.140	13 35 38.9	67.57
13	1 22 14.37	19.693	7 22 47.3	88.31	13	3 0 8.58	21.174	13 42 22.4	66.94
14	1 24 12.61	19.719	7 31 36.4	88.04	14	3 2 15.73	21.209	13 49 2.2	66.32
15	1 26 11.00	19.744	7 40 23.8	87.76	15	3 4 23.09	21.243	13 55 38.2	65.68
16	1 28 9.54	19.770	7 49 9.5	87.47	16	3 6 30.65	21.278	14 2 10.4	65.03
17	1 30 8.24	19.797	7 57 53.4	87.18	17	3 8 38.42	21.312	14 8 38.6	64.38
18	1 32 7.10	19.823	8 6 35.6	86.89	18	3 10 46.39	21.346	14 15 2.9	63.71
19	1 34 6.12	19.851	8 15 16.1	86.58	19	3 12 54.57	21.381	14 21 23.1	63.04
20	1 36 5.31	19.878	8 23 54.6	86.26	20	3 15 2.96	21.415	14 27 39.4	62.37
21	1 38 4.65	19.904	8 32 31.2	85.94	21	3 17 11.55	21.449	14 33 51.5	61.68
22	1 40 4.16	19.933	8 41 5.9	85.62	22	3 19 20.35	21.483	14 39 59.5	60.98
23	1 42 3.84	19.961	N. 8 49 38.7	85.28	23	3 21 29.35	21.518	N. 14 46 3.3	60.28
<b>WEDNESDAY 26.</b>					<b>FRIDAY 28.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	1 44 3.69	19.988	N. 8 58 9.3	84.93	0	3 23 38.57	21.553	N. 14 52 2.9	59.58
1	1 46 3.70	20.017	9 6 37.9	84.58	1	3 25 47.99	21.587	14 57 58.3	58.87
2	1 48 3.89	20.046	9 15 4.3	84.23	2	3 27 57.61	21.621	15 3 49.3	58.13
3	1 50 4.25	20.075	9 23 28.6	83.87	3	3 30 7.44	21.655	15 9 35.9	57.41
4	1 52 4.79	20.104	9 31 50.7	83.49	4	3 32 17.47	21.689	15 15 18.2	56.68
5	1 54 5.50	20.133	9 40 10.5	83.11	5	3 34 27.71	21.723	15 20 56.0	55.93
6	1 56 6.39	20.163	9 48 28.0	82.73	6	3 36 38.15	21.758	15 26 29.3	55.18
7	1 58 7.46	20.193	9 56 43.2	82.33	7	3 38 48.80	21.792	15 31 58.1	54.42
8	2 0 8.71	20.223	10 4 56.0	81.93	8	3 40 59.65	21.825	15 37 22.3	53.65
9	2 2 10.14	20.254	10 13 6.4	81.52	9	3 43 10.70	21.858	15 42 41.9	52.88
10	2 4 11.76	20.285	10 21 14.2	81.10	10	3 45 21.95	21.892	15 47 56.8	52.09
11	2 6 13.56	20.315	10 29 19.6	80.68	11	3 47 33.40	21.925	15 53 7.0	51.30
12	2 8 15.54	20.346	10 37 22.4	80.25	12	3 49 45.05	21.958	15 58 12.4	50.51
13	2 10 17.71	20.376	10 45 22.6	79.81	13	3 51 56.90	21.992	16 3 13.1	49.71
14	2 12 20.07	20.409	10 53 20.1	79.36	14	3 54 8.95	22.025	16 8 8.9	48.89
15	2 14 22.62	20.441	11 1 14.9	78.90	15	3 56 21.20	22.058	16 12 59.8	48.08
16	2 16 25.36	20.473	11 9 6.9	78.44	16	3 58 33.64	22.090	16 17 45.9	47.27
17	2 18 28.29	20.505	11 16 56.2	77.98	17	4 0 46.28	22.123	16 22 27.0	46.43
18	2 20 31.42	20.537	11 24 42.6	77.49	18	4 2 59.11	22.155	16 27 3.0	45.59
19	2 22 34.73	20.569	11 32 26.1	77.01	19	4 5 12.14	22.187	16 31 34.1	44.75
20	2 24 38.25	20.602	11 40 6.7	76.52	20	4 7 25.36	22.218	16 36 0.0	43.90
21	2 26 41.96	20.634	11 47 44.3	76.02	21	4 9 38.76	22.250	16 40 20.9	43.04
22	2 28 45.86	20.667	11 55 18.9	75.51	22	4 11 52.36	22.282	16 44 36.5	42.18
23	2 30 49.96	20.701	12 2 50.4	74.98	23	4 14 6.15	22.313	16 48 47.0	41.32
24	2 32 54.27	20.734	N. 12 10 18.7	74.46	24	4 16 20.12	22.343	N. 16 52 52.3	40.43

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
SATURDAY 29.					SUNDAY 30.				
	h m s	s	N. 16 52 52.3	40.43		h m s	s	N. 18 3 15.5	17.71
0	4 16 20.12	22.343	16 56 52.2	39.55	0	5 10 47.02	22.998	18 4 58.7	16.70
1	4 18 34.27	22.375	17 0 46.9	38.67	1	5 13 5.07	23.020	18 6 35.9	15.69
2	4 20 48.62	22.406	17 4 36.2	37.78	2	5 15 23.26	23.043	18 8 7.0	14.68
3	4 23 3.14	22.435	17 8 20.2	36.88	3	5 17 41.58	23.064	18 9 32.0	13.65
4	4 25 17.84	22.465	17 11 58.7	35.96	4	5 20 0.03	23.086	18 10 50.8	12.63
5	4 27 32.72	22.495	17 15 31.7	35.05	5	5 22 18.61	23.108	18 12 3.5	11.60
6	4 29 47.78	22.525	17 18 59.3	34.13	6	5 24 37.32	23.128	18 13 10.0	10.57
7	4 32 3.02	22.554	17 22 21.3	33.21	7	5 26 56.15	23.148	18 14 10.3	9.53
8	4 34 18.43	22.583	17 25 37.8	32.28	8	5 29 15.10	23.168	18 15 4.4	8.49
9	4 36 34.01	22.611	17 28 48.6	31.34	9	5 31 34.16	23.187	18 15 52.2	7.45
10	4 38 49.76	22.639	17 31 53.9	30.41	10	5 33 53.34	23.207	18 16 33.8	6.42
11	4 41 5.68	22.668	17 34 53.5	29.46	11	5 36 12.64	23.225	18 17 9.2	5.37
12	4 43 21.77	22.695	17 37 47.4	28.50	12	5 38 32.04	23.243	18 17 38.2	4.32
13	4 45 38.02	22.722	17 40 35.5	27.54	13	5 40 51.55	23.260	18 18 1.0	3.27
14	4 47 54.43	22.748	17 43 17.9	26.58	14	5 43 11.16	23.278	18 18 17.4	2.21
15	4 50 11.00	22.775	17 45 54.5	25.62	15	5 45 30.88	23.294	18 18 27.5	1.15
16	4 52 27.73	22.802	17 48 25.3	24.64	16	5 47 50.69	23.310	18 18 31.2	0.09
17	4 54 44.62	22.828	17 50 50.2	23.67	17	5 50 10.60	23.327	18 18 28.6	0.97
18	4 57 1.66	22.853	17 53 9.3	22.69	18	5 52 30.61	23.342	18 18 19.6	2.03
19	4 59 18.86	22.878	17 55 22.5	21.70	19	5 54 50.70	23.356	18 18 4.2	3.10
20	5 1 36.20	22.903	17 57 29.7	20.71	20	5 57 10.88	23.371	18 17 42.4	4.17
21	5 3 53.69	22.927	17 59 31.0	19.71	21	5 59 31.15	23.384	18 17 14.2	5.23
22	5 6 11.32	22.951	18 1 26.2	18.71	22	6 1 51.49	23.398	18 16 39.6	6.30
23	5 8 29.10	22.975	18 3 15.5	17.71	23	6 4 11.92	23.411	18 15 58.6	7.38
24	5 10 47.02	22.998			24	6 6 32.42	23.423		

PHASES OF THE MOON.

Apr. 4	☾ First Quarter	- - - - -	h m
11	☉ Full Moon	- - - - -	17 45.6
18	☾ Last Quarter	- - - - -	8 43.7
26	● New Moon	- - - - -	12 53.7
Apr. 9	☾ Perigee	- - - - -	h
21	☾ Apogee	- - - - -	20.6
		- - - - -	22.2

## AT APPARENT NOON.

Date.		THE SUN'S				Sidereal Time of the Semi-diameter passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Var. in hour.
		Apparent Right Ascension.	Var. in hour.	Apparent Declination.	Var. in hour.			
		h m s	s	N. ° ' "	"	m s	m s	s
Mon.	1	2 31 36.62	9.534	N. 14 55 8.1	45.70	1 5.97	2 54.33	0.321
Tues.	2	2 35 25.70	9.556	15 13 17.4	45.07	1 6.05	3 1.78	0.300
Wed.	3	2 39 15.31	9.578	15 31 11.6	44.44	1 6.13	3 8.71	0.278
Thur.	4	2 43 5.45	9.600	15 48 50.3	43.79	1 6.21	3 15.10	0.255
Frid.	5	2 46 56.13	9.623	16 6 13.3	43.13	1 6.29	3 20.97	0.233
Sat.	6	2 50 47.34	9.645	16 23 20.3	42.46	1 6.37	3 26.30	0.211
Sun.	7	2 54 39.09	9.668	16 40 10.8	41.76	1 6.45	3 31.08	0.188
Mon.	8	2 58 31.40	9.691	16 56 44.7	41.06	1 6.53	3 35.32	0.165
Tues.	9	3 2 24.26	9.714	17 13 1.6	40.35	1 6.62	3 39.00	0.142
Wed.	10	3 6 17.69	9.738	17 29 1.3	39.62	1 6.70	3 42.12	0.118
Thur.	11	3 10 11.69	9.762	17 44 43.4	38.89	1 6.78	3 44.66	0.094
Frid.	12	3 14 6.27	9.786	18 0 7.8	38.14	1 6.86	3 46.63	0.070
Sat.	13	3 18 1.43	9.811	18 15 14.0	37.38	1 6.94	3 48.02	0.046
Sun.	14	3 21 57.18	9.835	18 30 1.9	36.61	1 7.03	3 48.83	0.022
Mon.	15	3 25 53.51	9.859	18 44 31.2	35.83	1 7.11	3 49.06	0.003
Tues.	16	3 29 50.43	9.884	18 58 41.5	35.03	1 7.19	3 48.69	0.028
Wed.	17	3 33 47.94	9.908	19 12 32.7	34.23	1 7.27	3 47.74	0.052
Thur.	18	3 37 46.03	9.932	19 26 4.4	33.41	1 7.35	3 46.21	0.076
Frid.	19	3 41 44.69	9.956	19 39 16.4	32.58	1 7.43	3 44.11	0.100
Sat.	20	3 45 43.93	9.980	19 52 8.4	31.74	1 7.50	3 41.43	0.123
Sun.	21	3 49 43.73	10.003	20 4 40.1	30.89	1 7.58	3 38.19	0.146
Mon.	22	3 53 44.09	10.026	20 16 51.3	30.04	1 7.66	3 34.40	0.169
Tues.	23	3 57 45.00	10.049	20 28 41.8	29.17	1 7.73	3 30.06	0.192
Wed.	24	4 1 46.45	10.071	20 40 11.3	28.29	1 7.80	3 25.18	0.214
Thur.	25	4 5 48.42	10.093	20 51 19.5	27.40	1 7.87	3 19.78	0.235
Frid.	26	4 9 50.90	10.114	21 2 6.3	26.50	1 7.94	3 13.88	0.256
Sat.	27	4 13 53.87	10.134	21 12 31.3	25.59	1 8.01	3 7.48	0.277
Sun.	28	4 17 57.32	10.153	21 22 34.4	24.67	1 8.08	3 0.60	0.296
Mon.	29	4 22 1.23	10.172	21 32 15.3	23.74	1 8.15	2 53.26	0.315
Tues.	30	4 26 5.59	10.190	21 41 33.8	22.80	1 8.21	2 45.48	0.333
Wed.	31	4 30 10.37	10.208	21 50 29.8	21.86	1 8.27	2 37.28	0.350
Thur.	32	4 34 15.56	10.224	N. 21 59 2.9	20.90	1 8.33	2 28.67	0.367

\* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.



## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be subtracted from Apparent Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi-diameter.*		
		h m s	N. ° ' "	' "	m s	h m s
Mon.	1	2 31 37.08	N. 14 55 10.3	15 53.68	2 54.35	2 34 31.43
Tues.	2	2 35 26.19	15 13 19.7	15 53.45	3 1.80	2 38 27.98
Wed.	3	2 39 15.82	15 31 13.9	15 53.22	3 8.72	2 42 24.54
Thur.	4	2 43 5.97	15 48 52.7	15 53.00	3 15.12	2 46 21.09
Frid.	5	2 46 56.66	16 6 15.7	15 52.77	3 20.98	2 50 17.64
Sat.	6	2 50 47.89	16 23 22.7	15 52.55	3 26.31	2 54 14.20
Sun.	7	2 54 39.66	16 40 13.2	15 52.33	3 31.09	2 58 10.75
Mon.	8	2 58 31.98	16 56 47.1	15 52.11	3 35.33	3 2 7.31
Tues.	9	3 2 24.85	17 13 4.1	15 51.90	3 39.01	3 6 3.86
Wed.	10	3 6 18.29	17 29 3.7	15 51.68	3 42.12	3 10 0.42
Thur.	11	3 10 12.30	17 44 45.9	15 51.47	3 44.67	3 13 56.97
Frid.	12	3 14 6.89	18 0 10.2	15 51.26	3 46.64	3 17 53.53
Sat.	13	3 18 2.05	18 15 16.4	15 51.05	3 48.03	3 21 50.08
Sun.	14	3 21 57.80	18 30 4.3	15 50.84	3 48.83	3 25 46.64
Mon.	15	3 25 54.14	18 44 33.5	15 50.63	3 49.06	3 29 43.19
Tues.	16	3 29 51.06	18 58 43.7	15 50.43	3 48.69	3 33 39.75
Wed.	17	3 33 48.56	19 12 34.8	15 50.23	3 47.74	3 37 36.30
Thur.	18	3 37 46.65	19 26 6.5	15 50.03	3 46.21	3 41 32.86
Frid.	19	3 41 45.31	19 39 18.4	15 49.84	3 44.10	3 45 29.41
Sat.	20	3 45 44.54	19 52 10.3	15 49.65	3 41.42	3 49 25.97
Sun.	21	3 49 44.34	20 4 42.0	15 49.46	3 38.18	3 53 22.52
Mon.	22	3 53 44.69	20 16 53.1	15 49.28	3 34.39	3 57 19.08
Tues.	23	3 57 45.59	20 28 43.5	15 49.10	3 30.04	4 1 15.63
Wed.	24	4 1 47.02	20 40 12.9	15 48.92	3 25.17	4 5 12.19
Thur.	25	4 5 48.98	20 51 21.0	15 48.75	3 19.77	4 9 8.74
Frid.	26	4 9 51.44	21 2 7.7	15 48.59	3 13.86	4 13 5.30
Sat.	27	4 13 54.40	21 12 32.6	15 48.43	3 7.46	4 17 1.86
Sun.	28	4 17 57.83	21 22 35.6	15 48.27	3 0.58	4 20 58.41
Mon.	29	4 22 1.72	21 32 16.4	15 48.12	2 53.25	4 24 54.97
Tues.	30	4 26 6.06	21 41 34.9	15 47.97	2 45.47	4 28 51.52
Wed.	31	4 30 10.81	21 50 30.7	15 47.83	2 37.27	4 32 48.08
Thur.	32	4 34 15.98	N. 21 59 3.8	15 47.70	2 28.66	4 36 44.64

\* The Semidiameter for Apparent Noon may be assumed the same as that for Mean Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
			Noon.					
	<sup>°</sup> <sup>'</sup> <sup>"</sup>	S. <sup>"</sup>		<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>'</sup> <sup>"</sup> <sup>"</sup>	<sup>'</sup> <sup>"</sup> <sup>"</sup>	<sup>'</sup> <sup>"</sup> <sup>"</sup>	<sup>'</sup> <sup>"</sup> <sup>"</sup>
1	40 19 14.0	S. 0.73	0.0034009	21 21 57.98	15 40.91	15 45.09	57 27.25	57 42.57
2	41 17 26.6	0.72	0.0035066	21 18 2.07	15 49.27	15 53.40	57 57.86	58 13.04
3	42 15 37.3	0.68	0.0036109	21 14 6.16	15 57.49	16 1.49	58 28.01	58 42.67
4	43 13 45.9	0.61	0.0037141	21 10 10.25	16 5.34	16 9.00	58 56.79	59 10.20
5	44 11 52.5	0.51	0.0038161	21 6 14.35	16 12.40	16 15.45	59 22.63	59 33.80
6	45 9 57.2	0.39	0.0039171	21 2 18.44	16 18.06	16 20.17	59 43.40	59 51.15
7	46 7 59.9	0.26	0.0040172	20 58 22.53	16 21.68	16 22.51	59 56.68	59 59.71
8	47 6 0.7	S. 0.13	0.0041165	20 54 26.62	16 22.59	16 21.86	59 59.99	59 57.34
9	48 3 59.7	N. 0.01	0.0042151	20 50 30.71	16 20.30	16 17.92	59 51.62	59 42.85
10	49 1 57.0	0.14	0.0043130	20 46 34.80	16 14.70	16 10.72	59 31.07	59 16.48
11	49 59 52.7	0.25	0.0044103	20 42 38.89	16 6.04	16 0.75	58 59.33	58 39.98
12	50 57 46.8	0.33	0.0045069	20 38 42.98	15 54.99	15 48.87	58 18.86	57 56.42
13	51 55 39.5	0.40	0.0046028	20 34 47.08	15 42.51	15 36.06	57 33.12	57 9.49
14	52 53 30.8	0.43	0.0046978	20 30 51.17	15 29.65	15 23.39	56 46.01	56 23.08
15	53 51 20.9	0.43	0.0047919	20 26 55.26	15 17.41	15 11.81	56 1.18	55 40.64
16	54 49 9.7	0.39	0.0048849	20 22 59.35	15 6.66	15 2.05	55 21.77	55 4.86
17	55 46 57.3	0.33	0.0049767	20 19 3.44	14 58.03	14 54.64	54 50.13	54 37.74
18	56 44 43.8	0.26	0.0050672	20 15 7.53	14 51.94	14 49.93	54 27.83	54 20.46
19	57 42 29.1	0.17	0.0051562	20 11 11.62	14 48.62	14 48.01	54 15.67	54 13.46
20	58 40 13.4	N. 0.06	0.0052436	20 7 15.71	14 48.10	14 48.87	54 13.78	54 16.58
21	59 37 56.5	S. 0.07	0.0053293	20 3 19.80	14 50.27	14 52.28	54 21.73	54 29.10
22	60 35 38.5	0.20	0.0054132	19 59 23.89	14 54.85	14 57.93	54 38.50	54 49.78
23	61 33 19.5	0.33	0.0054951	19 55 27.98	15 1.45	15 5.35	55 2.68	55 16.97
24	62 30 59.4	0.44	0.0055751	19 51 32.07	15 9.56	15 14.01	55 32.39	55 48.69
25	63 28 38.1	0.55	0.0056528	19 47 36.16	15 18.61	15 23.30	56 5.56	56 22.75
26	64 26 15.7	0.64	0.0057284	19 43 40.25	15 28.01	15 32.66	56 40.00	56 57.03
27	65 23 52.2	0.70	0.0058018	19 39 44.34	15 37.19	15 41.54	57 13.62	57 29.56
28	66 21 27.4	0.73	0.0058728	19 35 48.43	15 45.67	15 49.54	57 44.68	57 58.85
29	67 19 1.4	0.73	0.0059416	19 31 52.52	15 53.11	15 56.38	58 11.96	58 23.95
30	68 16 34.2	0.71	0.0060081	19 27 56.61	15 59.34	16 1.97	58 34.79	58 44.45
31	69 14 5.6	0.65	0.0060725	19 24 0.70	16 4.30	16 6.30	58 52.95	59 0.28
32	70 11 35.7	S. 0.56	0.0061348	19 20 4.79	16 7.98	16 9.36	59 6.46	59 11.49

## MEAN TIME.

THE MOON'S								
Day.	Longitude.		Latitude.		Age.	Meridian Passage.		
	Noon.	Midnight.	Noon.	Midnight.		Upper.	Lower.	
					d	h m	h m	
1	91° 33' 32.5	98° 17' 16.0	S. 5° 10' 18.2	S. 5° 12' 27.6	4.29	3 40.0	16 7.3	
2	105 4 14.3	111 54 24.0	5 10 16.9	5 3 41.9	5.29	4 34.6	17 1.9	
3	118 47 41.9	125 44 3.7	4 52 42.1	4 37 21.4	6.29	5 29.2	17 56.3	
4	132 43 24.7	139 45 38.4	4 17 47.6	3 54 13.2	7.29	6 23.3	18 50.1	
5	146 50 36.5	153 58 8.0	3 26 55.3	2 56 15.7	8.29	7 16.8	19 43.4	
6	161 7 58.9	168 19 51.2	2 22 40.7	1 46 41.1	9.29	8 9.9	20 36.4	
7	175 33 22.7	182 48 6.7	S. 1° 08' 51.9	S. 0° 29' 51.0	10.29	9 3.0	21 29.7	
8	190 3 32.1	197 19 3.4	N. 0° 9' 40.9	N. 0° 49' 1.9	11.29	9 56.6	22 23.6	
9	204 34 1.7	211 47 45.5	1 27 29.8	2 4 24.2	12.29	10 50.9	23 18.3	
10	218 59 31.7	226 8 37.8	2 39 6.6	3 11 3.2	13.29	11 46.0	* *	
11	233 14 22.1	240 16 6.9	3 39 44.5	4 4 47.0	14.29	12 41.6	0 13.8	
12	247 13 18.4	254 5 29.2	4 25 52.8	4 42 50.5	15.29	13 37.0	1 9.4	
13	260 52 18.1	267 33 31.4	4 55 33.9	5 4 2.3	16.29	14 31.4	2 4.4	
14	274 9 2.8	280 38 53.7	5 8 19.6	5 8 32.9	17.29	15 23.9	2 57.9	
15	287 3 12.5	293 22 14.0	5 4 52.6	4 57 30.9	18.29	16 14.1	3 49.3	
16	299 36 18.8	305 45 52.6	4 46 41.8	4 32 39.9	19.29	17 1.8	4 38.2	
17	311 51 25.4	317 53 30.6	4 15 40.4	3 55 58.6	20.29	17 47.3	5 24.8	
18	323 52 43.9	329 49 43.1	3 33 50.2	3 9 30.2	21.29	18 31.1	6 9.4	
19	335 45 7.1	341 39 35.4	2 43 14.3	2 15 17.4	22.29	19 13.9	6 52.6	
20	347 33 47.3	353 28 21.8	1 45 55.6	1 15 24.3	23.29	19 56.3	7 35.1	
21	359 23 56.3	5 21 7.1	N. 0° 44' 0.2	N. 0° 12' 0.3	24.29	20 39.1	8 17.6	
22	11 20 27.6	17 22 29.1	S. 0° 20' 17.3	S. 0° 52' 33.7	25.29	21 22.9	9 0.8	
23	23 27 39.3	29 36 22.6	1 24 28.5	1 55 40.5	26.29	22 8.6	9 45.5	
24	35 48 58.5	42 5 42.8	2 25 47.4	2 54 25.8	27.29	22 56.5	10 32.3	
25	48 26 45.8	54 52 13.1	3 21 12.0	3 45 41.6	28.29	23 46.9	11 21.4	
26	61 22 4.7	67 56 16.0	4 7 31.1	4 26 17.4	29.29	* *	12 13.1	
27	74 34 37.5	81 16 55.2	4 41 39.2	4 53 17.2	0.75	0 39.7	13 6.8	
28	88 2 51.7	94 52 6.9	5 0 55.2	5 4 20.5	1.75	1 34.3	14 2.0	
29	101 44 18.9	108 39 4.7	5 3 24.4	4 58 2.6	2.75	2 29.8	14 57.7	
30	115 36 2.0	122 34 48.9	4 48 15.7	4 34 8.8	3.75	3 25.4	15 52.9	
31	129 35 5.8	136 36 34.8	4 15 52.2	3 53 40.4	4.75	4 20.1	16 47.0	
32	143 39 0.7	150 42 10.4	S. 3° 27' 52.4	S. 2° 58' 51.0	5.75	5 13.7	17 40.1	

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
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## MONDAY 1.

	h	m	s	s	N.	18°	15'	58"	6"	7"	38"
0	6	6	32	42	23	423					
1	6	8	53	00	23	436					
2	6	11	13	65	23	447					
3	6	13	34	36	23	458					
4	6	15	55	14	23	468					
5	6	18	15	98	23	478					
6	6	20	36	88	23	488					
7	6	22	57	84	23	498					
8	6	25	18	85	23	507					
9	6	27	39	92	23	515					
10	6	30	1	03	23	522					
11	6	32	22	18	23	529					
12	6	34	43	38	23	537					
13	6	37	4	62	23	543					
14	6	39	25	90	23	549					
15	6	41	47	21	23	554					
16	6	44	8	55	23	560					
17	6	46	29	93	23	565					
18	6	48	51	33	23	568					
19	6	51	12	75	23	573					
20	6	53	34	20	23	576					
21	6	55	55	66	23	578					
22	6	58	17	14	23	582					
23	7	0	38	64	23	584					
					N.	17	30	33	8	32	09

## TUESDAY 2.

0	7 3 0.15	23.585	N. 17 27 18.0	33.16
1	7 5 21.66	23.587	17 23 55.9	34.21
2	7 7 43.19	23.587	17 20 27.5	35.27
3	7 10 4.71	23.588	17 16 52.7	36.33
4	7 12 26.24	23.588	17 13 11.5	37.38
5	7 14 47.77	23.588	17 9 24.1	38.43
6	7 17 9.30	23.587	17 5 30.3	39.49
7	7 19 30.82	23.586	17 1 30.2	40.53
8	7 21 52.33	23.585	16 57 23.9	41.58
9	7 24 13.84	23.583	16 53 11.3	42.63
10	7 26 35.33	23.581	16 48 52.4	43.66
11	7 28 56.81	23.578	16 44 27.4	44.69
12	7 31 18.27	23.576	16 39 56.1	45.73
13	7 33 39.72	23.573	16 35 18.7	46.75
14	7 36 1.14	23.569	16 30 35.1	47.78
15	7 38 22.55	23.566	16 25 45.4	48.79
16	7 40 43.93	23.562	16 20 49.6	49.8
17	7 43 5.29	23.558	16 15 47.7	50.83
18	7 45 26.62	23.553	16 10 39.7	51.83
19	7 47 47.92	23.548	16 5 25.7	52.83
20	7 50 9.19	23.543	16 0 5.7	53.83
21	7 52 30.44	23.538	15 54 39.7	54.83
22	7 54 51.65	23.532	15 49 7.8	55.82
23	7 57 12.82	23.526	15 43 20.9	56.81
24	7 59 33.96	23.519	N. 15 37 46.1	57.78

## WEDNESDAY 3.

	h	m	s	s	N.	15°	37'	46"	1"			
0	7	59	33	96	23	519	15	37	46	57	78	
1	8	1	55	05	23	513	15	31	56	5	75	
2	8	4	16	11	23	507	15	26	1	59	73	
3	8	6	37	13	23	500	15	19	59	8	69	
4	8	8	58	11	23	493	15	13	52	8	65	
5	8	11	19	04	23	484	15	7	40	0	61	
6	8	13	39	92	23	477	15	1	21	5	55	
7	8	16	0	76	23	470	14	54	57	4	49	
8	8	18	21	56	23	463	14	48	27	6	43	
9	8	20	42	31	23	454	14	41	52	2	36	
10	8	23	3	01	23	446	14	35	11	3	28	
11	8	25	23	66	23	438	14	28	24	8	21	
12	8	27	44	26	23	429	14	21	32	8	12	
13	8	30	4	81	23	420	14	14	35	4	02	
14	8	32	25	30	23	412	14	7	32	6	92	
15	8	34	45	75	23	403	14	0	24	4	82	
16	8	37	6	14	23	393	13	53	10	8	70	
17	8	39	26	47	23	384	13	45	52	0	58	
18	8	41	46	75	23	376	13	38	27	9	45	
19	8	44	6	98	23	367	13	30	58	6	32	
20	8	46	27	15	23	357	13	23	24	1	18	
21	8	48	47	26	23	348	13	15	44	5	02	
22	8	51	7	32	23	338	13	7	59	9	77	
23	8	53	27	32	23	328	N. 13	0	10	1	78	71

## THURSDAY 4.

0	8 55 47.26	23.319	N. 12 52 15.4	79.53
1	8 58 7.15	23.310	12 44 15.8	80.35
2	9 0 26.98	23.300	12 36 11.2	81.17
3	9 2 46.75	23.291	12 28 1.8	81.97
4	9 5 6.47	23.282	12 19 47.6	82.70
5	9 7 26.13	23.272	12 11 28.7	83.55
6	9 9 45.73	23.262	12 3 5.0	84.34
7	9 12 5.27	23.252	11 54 36.6	85.12
8	9 14 24.76	23.243	11 46 3.6	85.88
9	9 16 44.19	23.233	11 37 26.1	86.63
10	9 19 3.56	23.224	11 28 44.1	87.38
11	9 21 22.88	23.215	11 19 57.6	88.12
12	9 23 42.14	23.205	11 11 6.7	88.85
13	9 26 1.34	23.196	11 2 11.4	89.58
14	9 28 20.49	23.187	10 53 11.8	90.28
15	9 30 39.58	23.178	10 44 8.0	90.98
16	9 32 58.63	23.170	10 35 0.0	91.68
17	9 35 17.62	23.160	10 25 47.8	92.38
18	9 37 36.55	23.152	10 16 31.5	93.05
19	9 39 55.44	23.143	10 7 11.2	93.72
20	9 42 14.27	23.134	9 57 46.9	94.38
21	9 44 33.05	23.126	9 48 18.7	95.03
22	9 46 51.78	23.118	9 38 46.6	95.67
23	9 49 10.47	23.110	9 29 10.7	96.29
24	9 51 29.10	23.102	N. 9 19 31.1	96.92

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
FRIDAY 5.					SUNDAY 7.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	9 51 29	10	23° 102	N. 9 19 31	0	11 41 51	93	22° 989	N. 0 42 47
1	9 53 47	69	23° 095	9 9 47	1	11 44 9	88	22° 994	0 31 22
2	9 56 6	24	23° 088	9 0 0	2	11 46 27	86	22° 999	0 19 57
3	9 58 24	74	23° 079	8 50 10	3	11 48 45	87	23° 004	N. 0 8 32
4	10 0 43	19	23° 073	8 40 16	4	11 51 3	91	23° 009	S. 0 2 52
5	10 3 1	60	23° 065	8 30 18	5	11 53 21	98	23° 014	0 14 18
6	10 5 19	97	23° 058	8 20 17	6	11 55 40	08	23° 020	0 25 44
7	10 7 38	30	23° 051	8 10 13	7	11 57 58	22	23° 027	0 37 9
8	10 9 56	58	23° 044	8 0 5	8	12 0 16	40	23° 033	0 48 35
9	10 12 14	83	23° 038	7 49 55	9	12 2 34	62	23° 039	1 0 0
10	10 14 33	04	23° 033	7 39 41	10	12 4 52	87	23° 046	1 11 26
11	10 16 51	22	23° 027	7 29 24	11	12 7 11	17	23° 054	1 22 51
12	10 19 9	36	23° 020	7 19 4	12	12 9 29	52	23° 062	1 34 15
13	10 21 27	46	23° 014	7 8 41	13	12 11 47	91	23° 069	1 45 39
14	10 23 45	53	23° 009	6 58 15	14	12 14 6	35	23° 078	1 57 3
15	10 26 3	57	23° 004	6 47 46	15	12 16 24	84	23° 085	2 8 26
16	10 28 21	58	23° 000	6 37 15	16	12 18 43	37	23° 093	2 19 48
17	10 30 39	57	22° 995	6 26 40	17	12 21 1	96	23° 103	2 31 9
18	10 32 57	52	22° 990	6 16 4	18	12 23 20	60	23° 112	2 42 30
19	10 35 15	45	22° 987	6 5 24	19	12 25 39	30	23° 121	2 53 50
20	10 37 33	36	22° 983	5 54 42	20	12 27 58	05	23° 130	3 5 8
21	10 39 51	25	22° 979	5 43 58	21	12 30 16	86	23° 139	3 16 26
22	10 42 9	11	22° 976	5 33 11	22	12 32 35	72	23° 149	3 27 43
23	10 44 26	96	22° 973	N. 5 22 22	23	12 34 54	65	23° 160	S. 3 38 58
SATURDAY 6.					MONDAY 8.				
0	10 46 44	79	22° 970	N. 5 11 31	0	12 37 13	64	23° 170	S. 3 50 12
1	10 49 2	60	22° 968	5 0 37	1	12 39 32	69	23° 180	4 1 24
2	10 51 20	40	22° 966	4 49 41	2	12 41 51	80	23° 191	4 12 35
3	10 53 38	19	22° 964	4 38 44	3	12 44 10	98	23° 203	4 23 45
4	10 55 55	97	22° 963	4 27 44	4	12 46 30	23	23° 213	4 34 53
5	10 58 13	74	22° 961	4 16 43	5	12 48 49	54	23° 224	4 45 59
6	11 0 31	50	22° 960	4 5 39	6	12 51 8	92	23° 236	4 57 4
7	11 2 49	26	22° 959	3 54 34	7	12 53 28	37	23° 248	5 8 6
8	11 5 7	01	22° 959	3 43 27	8	12 55 47	89	23° 259	5 19 7
9	11 7 24	77	22° 959	3 32 19	9	12 58 7	48	23° 272	5 30 6
10	11 9 42	52	22° 958	3 21 9	10	13 0 27	15	23° 283	5 41 2
11	11 12 0	27	22° 959	3 9 58	11	13 2 46	88	23° 296	5 51 57
12	11 14 18	03	22° 959	2 58 45	12	13 5 6	70	23° 308	6 2 49
13	11 16 35	78	22° 960	2 47 30	13	13 7 26	58	23° 320	6 13 39
14	11 18 53	55	22° 962	2 36 15	14	13 9 46	54	23° 333	6 24 26
15	11 21 11	32	22° 963	2 24 58	15	13 12 6	58	23° 346	6 35 11
16	11 23 29	10	22° 965	2 13 41	16	13 14 26	69	23° 358	6 45 54
17	11 25 46	90	22° 968	2 2 22	17	13 16 46	88	23° 372	6 56 34
18	11 28 4	71	22° 969	1 51 2	18	13 19 7	15	23° 385	7 7 11
19	11 30 22	53	22° 972	1 39 41	19	13 21 27	50	23° 398	7 17 46
20	11 32 40	37	22° 975	1 28 20	20	13 23 47	93	23° 412	7 28 17
21	11 34 58	23	22° 978	1 16 57	21	13 26 8	44	23° 425	7 38 46
22	11 37 16	11	22° 982	1 5 34	22	13 28 29	03	23° 438	7 49 12
23	11 39 34	01	22° 985	0 54 11	23	13 30 49	09	23° 451	7 59 35
24	11 41 51	93	22° 989	N. 0 42 47	24	13 33 10	44	23° 465	S. 8 9 54

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>TUESDAY 9.</b>					<b>THURSDAY 11.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	13 33 10.44	23.465	S. 8 9 54.8	103.00	0	15 27 11.47	23.963	S. 15 2 29.6	65.17
1	13 35 31.27	23.478	8 20 11.2	102.47	1	15 29 35.26	23.967	15 8 57.6	64.17
2	13 37 52.17	23.491	8 30 24.4	101.92	2	15 31 59.07	23.969	15 15 19.6	63.17
3	13 40 13.16	23.505	8 40 34.2	101.34	3	15 34 22.89	23.972	15 21 35.6	62.16
4	13 42 34.23	23.519	8 50 40.5	100.77	4	15 36 46.73	23.973	15 27 45.5	61.14
5	13 44 55.39	23.533	9 0 43.4	100.18	5	15 39 10.57	23.974	15 33 49.3	60.12
6	13 47 16.62	23.545	9 10 42.7	99.58	6	15 41 34.42	23.976	15 39 47.0	59.09
7	13 49 37.93	23.558	9 20 38.4	98.97	7	15 43 58.28	23.977	15 45 38.4	58.06
8	13 51 59.32	23.573	9 30 30.4	98.35	8	15 46 22.14	23.977	15 51 23.7	57.03
9	13 54 20.80	23.586	9 40 18.6	97.72	9	15 48 46.00	23.977	15 57 2.7	55.98
10	13 56 42.35	23.598	9 50 3.0	97.08	10	15 51 9.86	23.975	16 2 35.4	54.93
11	13 59 3.98	23.613	9 59 43.5	96.42	11	15 53 33.70	23.973	16 8 1.9	53.88
12	14 1 25.70	23.626	10 9 20.0	95.75	12	15 55 57.54	23.972	16 13 22.0	52.82
13	14 3 47.49	23.638	10 18 52.5	95.07	13	15 58 21.36	23.969	16 18 35.7	51.76
14	14 6 9.35	23.651	10 28 20.8	94.38	14	16 0 45.17	23.966	16 23 43.1	50.70
15	14 8 31.30	23.664	10 37 45.0	93.68	15	16 3 8.95	23.962	16 28 44.1	49.63
16	14 10 53.32	23.677	10 47 5.0	92.97	16	16 5 32.71	23.958	16 33 38.7	48.57
17	14 13 15.42	23.689	10 56 20.6	92.24	17	16 7 56.45	23.954	16 38 26.9	47.48
18	14 15 37.59	23.702	11 5 31.9	91.52	18	16 10 20.16	23.948	16 43 8.5	46.40
19	14 17 59.84	23.715	11 14 38.8	90.77	19	16 12 43.83	23.943	16 47 43.7	45.33
20	14 20 22.17	23.727	11 23 41.1	90.01	20	16 15 7.47	23.937	16 52 12.5	44.25
21	14 22 44.56	23.738	11 32 38.9	89.25	21	16 17 31.07	23.930	16 56 34.7	43.16
22	14 25 7.03	23.750	11 41 32.1	88.48	22	16 19 54.63	23.923	17 0 50.4	42.07
23	14 27 29.56	23.762	S. 11 50 20.6	87.69	23	16 22 18.14	23.914	S. 17 4 59.5	40.98
<b>WEDNESDAY 10.</b>					<b>FRIDAY 12.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	14 29 52.17	23.774	S. 11 59 4.4	86.89	0	16 24 41.60	23.906	S. 17 9 2.1	39.88
1	14 32 14.85	23.785	12 7 43.3	86.08	1	16 27 5.01	23.898	17 12 58.1	38.79
2	14 34 37.59	23.796	12 16 17.4	85.27	2	16 29 28.37	23.888	17 16 47.6	37.70
3	14 37 0.40	23.807	12 24 46.6	84.45	3	16 31 51.66	23.877	17 20 30.5	36.59
4	14 39 23.27	23.817	12 33 10.8	83.62	4	16 34 14.89	23.867	17 24 6.7	35.49
5	14 41 46.20	23.828	12 41 30.0	82.78	5	16 36 38.06	23.856	17 27 36.4	34.40
6	14 44 9.20	23.838	12 49 44.1	81.92	6	16 39 1.16	23.843	17 30 59.5	33.29
7	14 46 32.26	23.848	12 57 53.0	81.06	7	16 41 24.18	23.831	17 34 15.9	32.19
8	14 48 55.37	23.857	13 5 56.8	80.19	8	16 43 47.13	23.818	17 37 25.8	31.09
9	14 51 18.54	23.867	13 13 55.3	79.31	9	16 46 10.00	23.804	17 40 29.0	29.98
10	14 53 41.77	23.875	13 21 48.5	78.42	10	16 48 32.78	23.790	17 43 25.6	28.88
11	14 56 5.04	23.883	13 29 36.3	77.53	11	16 50 55.48	23.775	17 46 15.5	27.78
12	14 58 28.37	23.892	13 37 18.8	76.62	12	16 53 18.08	23.760	17 48 58.9	26.68
13	15 0 51.74	23.899	13 44 55.7	75.70	13	16 55 40.60	23.745	17 51 35.6	25.57
14	15 3 15.16	23.908	13 52 27.2	74.79	14	16 58 3.02	23.728	17 54 5.7	24.46
15	15 5 38.63	23.915	13 59 53.2	73.86	15	17 0 25.34	23.711	17 56 29.1	23.36
16	15 8 2.14	23.922	14 7 13.5	72.92	16	17 2 47.55	23.693	17 58 46.0	22.26
17	15 10 25.69	23.928	14 14 28.2	71.98	17	17 5 9.66	23.676	18 0 56.2	21.15
18	15 12 49.28	23.934	14 21 37.3	71.03	18	17 7 31.66	23.657	18 2 59.8	20.05
19	15 15 12.90	23.940	14 28 40.6	70.07	19	17 9 53.54	23.637	18 4 56.8	18.96
20	15 17 36.56	23.945	14 35 38.1	69.10	20	17 12 15.30	23.618	18 6 47.3	17.86
21	15 20 0.24	23.950	14 42 29.8	68.13	21	17 14 36.95	23.598	18 8 31.1	16.76
22	15 22 23.96	23.955	14 49 15.6	67.15	22	17 16 58.47	23.577	18 10 8.4	15.67
23	15 24 47.70	23.959	14 55 55.6	66.17	23	17 19 19.87	23.556	18 11 39.1	14.58
24	15 27 11.47	23.963	S. 15 2 29.6	65.17	24	17 21 41.14	23.533	S. 18 13 3.3	13.48

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
SATURDAY 13.					MONDAY 15.				
	h m s	s				h m s	s		
0	17 21 41.14	23.533	S. 18 13 3.3	13.48	0	19 11 16.12	21.994	S. 17 18 59.8	34.13
1	17 24 2.27	23.510	18 14 20.9	12.39	1	19 13 27.97	21.955	17 15 32.5	34.98
2	17 26 23.26	23.488	18 15 32.0	11.32	2	19 15 39.58	21.917	17 12 0.0	35.83
3	17 28 44.12	23.465	18 16 36.7	10.23	3	19 17 50.97	21.878	17 8 22.5	36.67
4	17 31 4.84	23.441	18 17 34.8	9.14	4	19 20 2.12	21.839	17 4 40.0	37.51
5	17 33 25.41	23.416	18 18 26.4	8.07	5	19 22 13.04	21.800	17 0 52.4	38.34
6	17 35 45.83	23.391	18 19 11.6	6.99	6	19 24 23.72	21.761	16 56 59.9	39.16
7	17 38 6.10	23.365	18 19 50.3	5.92	7	19 26 34.17	21.723	16 53 2.5	39.98
8	17 40 26.21	23.339	18 20 22.6	4.85	8	19 28 44.39	21.683	16 49 0.2	40.78
9	17 42 46.17	23.313	18 20 48.5	3.78	9	19 30 54.37	21.644	16 44 53.1	41.59
10	17 45 5.97	23.286	18 21 8.0	2.72	10	19 33 4.12	21.605	16 40 41.1	42.39
11	17 47 25.60	23.258	18 21 21.1	1.66	11	19 35 13.63	21.566	16 36 24.4	43.18
12	17 49 45.07	23.231	18 21 27.9	0.61	12	19 37 22.91	21.527	16 32 3.0	43.96
13	17 52 4.37	23.203	18 21 28.3	0.45	13	19 39 31.95	21.488	16 27 36.9	44.73
14	17 54 23.50	23.173	18 21 22.5	1.49	14	19 41 40.76	21.449	16 23 6.2	45.50
15	17 56 42.45	23.144	18 21 10.4	2.54	15	19 43 49.34	21.410	16 18 30.9	46.26
16	17 59 1.23	23.115	18 20 52.0	3.58	16	19 45 57.68	21.371	16 13 51.1	47.02
17	18 1 19.83	23.085	18 20 27.4	4.62	17	19 48 5.79	21.332	16 9 6.7	47.77
18	18 3 38.25	23.054	18 19 56.6	5.65	18	19 50 13.66	21.293	16 4 17.8	48.51
19	18 5 56.48	23.023	18 19 19.6	6.68	19	19 52 21.30	21.254	15 59 24.6	49.24
20	18 8 14.52	22.992	18 18 36.4	7.70	20	19 54 28.71	21.216	15 54 26.9	49.98
21	18 10 32.38	22.961	18 17 47.2	8.72	21	19 56 35.89	21.177	15 49 24.9	50.70
22	18 12 50.05	22.928	18 16 51.8	9.73	22	19 58 42.83	21.138	15 44 18.5	51.42
23	18 15 7.52	22.896	S. 18 15 50.4	10.73	23	20 0 49.55	21.100	S. 15 39 7.9	52.12
SUNDAY 14.					TUESDAY 16.				
	h m s	s				h m s	s		
0	18 17 24.80	22.863	S. 18 14 43.0	11.74	0	20 2 56.03	21.061	S. 15 33 53.1	52.82
1	18 19 41.88	22.830	18 13 29.5	12.74	1	20 5 2.28	21.023	15 28 34.1	53.52
2	18 21 58.76	22.797	18 12 10.1	13.73	2	20 7 8.31	20.985	15 23 10.9	54.21
3	18 24 15.44	22.763	18 10 44.8	14.72	3	20 9 14.10	20.947	15 17 43.6	54.88
4	18 26 31.91	22.728	18 9 13.5	15.70	4	20 11 19.67	20.909	15 12 12.3	55.56
5	18 28 48.18	22.694	18 7 36.4	16.68	5	20 13 25.01	20.872	15 6 36.9	56.23
6	18 31 4.24	22.659	18 5 53.4	17.65	6	20 15 30.13	20.834	15 0 57.5	56.89
7	18 33 20.09	22.624	18 4 4.6	18.62	7	20 17 35.02	20.797	14 55 14.2	57.54
8	18 35 35.73	22.589	18 2 10.0	19.58	8	20 19 39.69	20.760	14 49 27.0	58.19
9	18 37 51.16	22.553	18 0 9.7	20.53	9	20 21 44.14	20.723	14 43 35.9	58.83
10	18 40 6.37	22.518	17 58 3.7	21.48	10	20 23 48.36	20.686	14 37 41.0	59.47
11	18 42 21.37	22.483	17 55 52.0	22.43	11	20 25 52.37	20.650	14 31 42.3	60.09
12	18 44 36.16	22.446	17 53 34.6	23.36	12	20 27 56.16	20.613	14 25 39.9	60.72
13	18 46 50.72	22.408	17 51 11.7	24.29	13	20 29 59.72	20.576	14 19 33.7	61.33
14	18 49 5.06	22.372	17 48 43.2	25.22	14	20 32 3.07	20.541	14 13 23.9	61.94
15	18 51 19.18	22.335	17 46 9.1	26.13	15	20 34 6.21	20.506	14 7 10.4	62.54
16	18 53 33.08	22.298	17 43 29.6	27.04	16	20 36 9.14	20.470	14 0 53.4	63.13
17	18 55 46.75	22.260	17 40 44.6	27.96	17	20 38 11.85	20.434	13 54 32.8	63.73
18	18 58 0.20	22.223	17 37 54.1	28.86	18	20 40 14.35	20.399	13 48 8.7	64.31
19	19 0 13.42	22.185	17 34 58.3	29.74	19	20 42 16.64	20.364	13 41 41.1	64.89
20	19 2 26.42	22.148	17 31 57.2	30.63	20	20 44 18.72	20.330	13 35 10.0	65.46
21	19 4 39.19	22.109	17 28 50.7	31.52	21	20 46 20.60	20.296	13 28 35.6	66.02
22	19 6 51.73	22.071	17 25 38.9	32.39	22	20 48 22.27	20.262	13 21 57.8	66.58
23	19 9 4.04	22.033	17 22 22.0	33.26	23	20 50 23.74	20.228	13 15 16.7	67.13
24	19 11 16.12	21.994	S. 17 18 59.8	34.13	24	20 52 25.01	20.195	S. 13 8 32.3	67.67

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.*	Var. in 10 <sup>m</sup> .
WEDNESDAY 17.					FRIDAY 19.				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	20 52 25.01	20.195	S. 13° 8' 32.3	67.67	0	22 26 9.73	19.017	S. 6° 52' 25.1	86.87
1	20 54 26.08	20.163	13 1 44.7	68.20	1	22 28 3.78	19.002	6 43 43.1	87.13
2	20 56 26.96	20.129	12 54 53.9	68.73	2	22 29 57.75	18.988	6 34 59.5	87.39
3	20 58 27.63	20.096	12 47 59.9	69.27	3	22 31 51.64	18.975	6 26 14.4	87.65
4	21 0 28.11	20.063	12 41 2.7	69.78	4	22 33 45.45	18.963	6 17 27.7	87.90
5	21 2 28.40	20.033	12 34 2.5	70.29	5	22 35 39.19	18.950	6 8 39.6	88.14
6	21 4 28.50	20.001	12 26 59.2	70.81	6	22 37 32.85	18.938	5 59 50.0	88.38
7	21 6 28.41	19.970	12 19 52.8	71.31	7	22 39 26.44	18.926	5 50 59.0	88.62
8	21 8 28.14	19.939	12 12 43.5	71.79	8	22 41 19.96	18.915	5 42 6.6	88.84
9	21 10 27.68	19.908	12 5 31.3	72.28	9	22 43 13.42	18.904	5 33 12.9	89.07
10	21 12 27.04	19.878	11 58 16.1	72.77	10	22 45 6.81	18.893	5 24 17.8	89.29
11	21 14 26.22	19.848	11 50 58.1	73.24	11	22 47 0.14	18.884	5 15 21.4	89.51
12	21 16 25.21	19.818	11 43 37.2	73.72	12	22 48 53.42	18.875	5 6 23.7	89.72
13	21 18 24.03	19.789	11 36 13.5	74.18	13	22 50 46.64	18.866	4 57 24.8	89.92
14	21 20 22.68	19.761	11 28 47.0	74.64	14	22 52 39.81	18.858	4 48 24.7	90.12
15	21 22 21.16	19.733	11 21 17.8	75.09	15	22 54 32.94	18.851	4 39 23.4	90.32
16	21 24 19.47	19.704	11 13 45.9	75.53	16	22 56 26.02	18.843	4 30 20.9	90.51
17	21 26 17.61	19.676	11 6 11.4	75.98	17	22 58 19.05	18.835	4 21 17.3	90.68
18	21 28 15.58	19.648	10 58 34.2	76.42	18	23 0 12.04	18.829	4 12 12.7	90.86
19	21 30 13.39	19.622	10 50 54.4	76.84	19	23 2 5.00	18.824	4 3 7.0	91.04
20	21 32 11.04	19.595	10 43 12.1	77.27	20	23 3 57.93	18.818	3 54 0.2	91.21
21	21 34 8.53	19.569	10 35 27.2	77.68	21	23 5 50.82	18.813	3 44 52.5	91.37
22	21 36 5.87	19.543	10 27 39.9	78.09	22	23 7 43.69	18.809	3 35 43.8	91.53
23	21 38 3.05	19.518	S. 10 19 50.1	78.50	23	23 9 36.53	18.805	S. 3 26 34.1	91.68
THURSDAY 18.					SATURDAY 20.				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	21 40 0.08	19.493	S. 10 11 57.9	78.90	0	23 11 29.35	18.801	S. 3 17 23.6	91.83
1	21 41 56.96	19.468	10 4 3.3	79.29	1	23 13 22.14	18.798	3 8 12.2	91.98
2	21 43 53.69	19.443	9 56 6.4	79.68	2	23 15 14.92	18.796	2 58 59.9	92.12
3	21 45 50.28	19.419	9 48 7.1	80.07	3	23 17 7.69	18.793	2 49 46.8	92.24
4	21 47 46.72	19.396	9 40 5.5	80.45	4	23 19 0.44	18.792	2 40 33.0	92.37
5	21 49 43.03	19.373	9 32 1.7	80.82	5	23 20 53.19	18.791	2 31 18.4	92.50
6	21 51 39.20	19.350	9 23 55.7	81.18	6	23 22 45.93	18.790	2 22 3.0	92.62
7	21 53 35.23	19.328	9 15 47.5	81.54	7	23 24 38.67	18.790	2 12 47.0	92.73
8	21 55 31.14	19.307	9 7 37.2	81.90	8	23 26 31.41	18.790	2 3 30.3	92.83
9	21 57 26.91	19.285	8 59 24.7	82.26	9	23 28 24.15	18.791	1 54 13.0	92.93
10	21 59 22.56	19.264	8 51 10.1	82.60	10	23 30 16.90	18.793	1 44 55.1	93.03
11	22 1 18.08	19.243	8 42 53.5	82.93	11	23 32 9.66	18.794	1 35 36.6	93.13
12	22 3 13.48	19.223	8 34 34.9	83.28	12	23 34 2.43	18.796	1 26 17.6	93.22
13	22 5 8.76	19.203	8 26 14.2	83.61	13	23 35 55.21	18.799	1 16 58.0	93.30
14	22 7 3.92	19.184	8 17 51.6	83.93	14	23 37 48.02	18.803	1 7 38.0	93.37
15	22 8 58.97	19.166	8 9 27.1	84.24	15	23 39 40.84	18.805	0 58 17.6	93.44
16	22 10 53.91	19.148	8 1 0.7	84.56	16	23 41 33.68	18.809	0 48 56.7	93.51
17	22 12 48.74	19.130	7 52 32.4	84.88	17	23 43 26.55	18.815	0 39 35.5	93.57
18	22 14 43.47	19.113	7 44 2.3	85.18	18	23 45 19.46	18.820	0 30 13.9	93.63
19	22 16 38.09	19.094	7 35 30.4	85.46	19	23 47 12.39	18.825	0 20 51.9	93.68
20	22 18 32.60	19.078	7 26 56.8	85.75	20	23 49 5.36	18.831	0 11 29.7	93.72
21	22 20 27.02	19.063	7 18 21.4	86.04	21	23 50 58.36	18.838	S. 0 2 7.3	93.76
22	22 22 21.35	19.047	7 9 44.3	86.33	22	23 52 51.41	18.845	N. 0 7 15.4	93.80
23	22 24 15.58	19.032	7 1 5.5	86.60	23	23 54 44.50	18.852	0 16 38.3	93.83
24	22 26 9.73	19.017	S. 6 52 25.1	86.87	24	23 56 37.63	18.860	N. 0 26 1.3	93.85



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 21.</b>					<b>TUESDAY 23.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	23 56 37.63	18.860	N. 0 26 1.3	93.85	0	1 28 56.66	19.774	N. 7 48 22.3	88.11
1	23 58 30.82	18.869	0 35 24.5	93.87	1	1 30 55.39	19.803	7 57 10.2	87.83
2	0 0 24.06	18.878	0 44 47.7	93.88	2	1 32 54.29	19.832	8 5 56.3	87.54
3	0 2 17.35	18.887	0 54 11.0	93.89	3	1 34 53.37	19.863	8 14 40.7	87.26
4	0 4 10.70	18.897	1 3 34.4	93.89	4	1 36 52.64	19.893	8 23 23.4	86.96
5	0 6 4.11	18.907	1 12 57.7	93.88	5	1 38 52.09	19.923	8 32 4.2	86.65
6	0 7 57.58	18.918	1 22 21.0	93.88	6	1 40 51.72	19.954	8 40 43.2	86.34
7	0 9 51.12	18.929	1 31 44.3	93.87	7	1 42 51.54	19.985	8 49 20.3	86.02
8	0 11 44.73	18.941	1 41 7.4	93.84	8	1 44 51.54	20.017	8 57 55.4	85.68
9	0 13 38.41	18.953	1 50 30.4	93.82	9	1 46 51.74	20.049	9 6 28.5	85.35
10	0 15 32.16	18.965	1 59 53.2	93.78	10	1 48 52.13	20.082	9 14 59.6	85.01
11	0 17 25.99	18.979	2 9 15.8	93.75	11	1 50 52.72	20.114	9 23 28.6	84.66
12	0 19 19.91	18.993	2 18 38.2	93.71	12	1 52 53.50	20.148	9 31 55.5	84.31
13	0 21 13.90	19.006	2 28 0.3	93.66	13	1 54 54.49	20.181	9 40 20.3	83.94
14	0 23 7.98	19.021	2 37 22.1	93.61	14	1 56 55.67	20.213	9 48 42.8	83.56
15	0 25 2.15	19.036	2 46 43.6	93.54	15	1 58 57.05	20.248	9 57 3.0	83.18
16	0 26 56.41	19.051	2 56 4.6	93.48	16	2 0 58.64	20.282	10 5 21.0	82.80
17	0 28 50.76	19.067	3 5 25.3	93.41	17	2 3 0.43	20.316	10 13 36.6	82.40
18	0 30 45.21	19.083	3 14 45.5	93.33	18	2 5 2.43	20.352	10 21 49.8	81.99
19	0 32 39.76	19.100	3 24 5.3	93.25	19	2 7 4.65	20.387	10 30 0.5	81.58
20	0 34 34.41	19.117	3 33 24.5	93.16	20	2 9 7.07	20.422	10 38 8.8	81.17
21	0 36 29.16	19.134	3 42 43.2	93.06	21	2 11 9.71	20.458	10 46 14.5	80.73
22	0 38 24.02	19.153	3 52 1.2	92.96	22	2 13 12.56	20.493	10 54 17.6	80.30
23	0 40 18.99	19.172	N. 4 1 18.7	92.86	23	2 15 15.62	20.528	N. 11 2 18.1	79.87
<b>MONDAY 22.</b>					<b>WEDNESDAY 24.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	0 42 14.08	19.191	N. 4 10 35.5	92.74	0	2 17 18.90	20.565	N. 11 10 16.0	79.42
1	0 44 9.28	19.210	4 19 51.6	92.63	1	2 19 22.40	20.602	11 18 11.1	78.95
2	0 46 4.60	19.231	4 29 7.0	92.50	2	2 21 26.12	20.638	11 26 3.4	78.48
3	0 48 0.05	19.251	4 38 21.6	92.37	3	2 23 30.06	20.675	11 33 52.9	78.01
4	0 49 55.61	19.271	4 47 35.4	92.23	4	2 25 34.22	20.713	11 41 39.5	77.53
5	0 51 51.30	19.293	4 56 48.3	92.08	5	2 27 38.61	20.750	11 49 23.2	77.04
6	0 53 47.12	19.314	5 6 0.4	91.93	6	2 29 43.22	20.788	11 57 4.0	76.54
7	0 55 43.07	19.336	5 15 11.5	91.78	7	2 31 48.06	20.826	12 4 41.7	76.03
8	0 57 39.15	19.358	5 24 21.7	91.62	8	2 33 53.13	20.863	12 12 16.4	75.52
9	0 59 35.37	19.382	5 33 30.9	91.45	9	2 35 58.42	20.901	12 19 47.9	74.99
10	1 1 31.73	19.404	5 42 39.1	91.27	10	2 38 3.94	20.939	12 27 16.3	74.46
11	1 3 28.22	19.428	5 51 46.1	91.08	11	2 40 9.69	20.978	12 34 41.4	73.92
12	1 5 24.86	19.453	6 0 52.1	90.90	12	2 42 15.68	21.017	12 42 3.3	73.38
13	1 7 21.65	19.478	6 9 56.9	90.70	13	2 44 21.89	21.055	12 49 21.9	72.83
14	1 9 18.59	19.503	6 19 0.5	90.50	14	2 46 28.34	21.095	12 56 37.2	72.26
15	1 11 15.68	19.528	6 28 2.9	90.29	15	2 48 35.03	21.134	13 3 49.0	71.68
16	1 13 12.92	19.553	6 37 4.0	90.08	16	2 50 41.95	21.173	13 10 57.3	71.10
17	1 15 10.31	19.579	6 46 3.9	89.86	17	2 52 49.10	21.212	13 18 2.2	70.52
18	1 17 7.87	19.606	6 55 2.3	89.63	18	2 54 56.49	21.251	13 25 3.5	69.92
19	1 19 5.58	19.633	7 3 59.4	89.39	19	2 57 4.11	21.290	13 32 1.2	69.31
20	1 21 3.46	19.661	7 12 55.0	89.14	20	2 59 11.97	21.330	13 38 55.2	68.69
21	1 23 1.51	19.688	7 21 49.1	88.90	21	3 1 20.07	21.369	13 45 45.5	68.07
22	1 24 59.72	19.716	7 30 41.8	88.65	22	3 3 28.40	21.408	13 52 32.0	67.43
23	1 26 58.10	19.745	7 39 32.9	88.38	23	3 5 36.97	21.449	13 59 14.7	66.80
24	1 28 56.66	19.774	N. 7 48 22.3	88.11	24	3 7 45.79	21.489	N. 14 5 53.6	66.16

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 25.</b>					<b>SATURDAY 27.</b>				
	<b>h m s</b>	<b>s</b>	<b>N. ° ' "</b>	<b>66. "</b>		<b>h m s</b>	<b>s</b>	<b>N. ° ' "</b>	<b>25. "</b>
0	3 7 45.79	21.489	N. 14 5 53.6	66.16	0	4 55 18.78	23.238	N. 17 53 26.1	25.76
1	3 9 54.84	21.528	14 12 28.6	65.50	1	4 57 38.30	23.267	17 55 57.6	24.74
2	3 12 4.13	21.568	14 18 59.6	64.83	2	4 59 57.98	23.295	17 58 23.0	23.73
3	3 14 13.65	21.608	14 25 26.6	64.17	3	5 2 17.84	23.323	18 0 42.3	22.70
4	3 16 23.42	21.648	14 31 49.6	63.48	4	5 4 37.86	23.350	18 2 55.4	21.67
5	3 18 33.43	21.688	14 38 8.4	62.78	5	5 6 58.04	23.377	18 5 2.3	20.63
6	3 20 43.67	21.727	14 44 23.0	62.09	6	5 9 18.38	23.403	18 7 3.0	19.60
7	3 22 54.15	21.767	14 50 33.5	61.39	7	5 11 38.88	23.429	18 8 57.5	18.56
8	3 25 4.87	21.807	14 56 39.7	60.68	8	5 13 59.53	23.454	18 10 45.7	17.51
9	3 27 15.83	21.847	15 2 41.6	59.95	9	5 16 20.33	23.479	18 12 27.6	16.45
10	3 29 27.03	21.886	15 8 39.1	59.22	10	5 18 41.28	23.503	18 14 3.1	15.39
11	3 31 38.46	21.925	15 14 32.2	58.48	11	5 21 2.37	23.527	18 15 32.3	14.34
12	3 33 50.13	21.965	15 20 20.8	57.73	12	5 23 23.60	23.550	18 16 55.2	13.28
13	3 36 2.04	22.004	15 26 5.0	56.98	13	5 25 44.97	23.573	18 18 11.6	12.20
14	3 38 14.18	22.043	15 31 44.6	56.21	14	5 28 6.47	23.594	18 19 21.6	11.13
15	3 40 26.56	22.083	15 37 19.5	55.43	15	5 30 28.10	23.616	18 20 25.1	10.04
16	3 42 39.17	22.122	15 42 49.8	54.66	16	5 32 49.86	23.637	18 21 22.1	8.97
17	3 44 52.02	22.161	15 48 15.4	53.88	17	5 35 11.74	23.657	18 22 12.7	7.88
18	3 47 5.10	22.199	15 53 36.3	53.08	18	5 37 33.74	23.676	18 22 56.7	6.79
19	3 49 18.41	22.238	15 58 52.3	52.27	19	5 39 55.85	23.695	18 23 34.2	5.70
20	3 51 31.95	22.276	16 4 3.5	51.46	20	5 42 18.08	23.713	18 24 5.1	4.61
21	3 53 45.72	22.314	16 9 9.8	50.64	21	5 44 40.41	23.731	18 24 29.5	3.52
22	3 55 59.72	22.352	16 14 11.2	49.82	22	5 47 2.85	23.748	18 24 47.3	2.41
23	3 58 13.94	22.389	N. 16 19 7.6	48.98	23	5 49 25.39	23.765	N. 18 24 58.4	1.31
<b>FRIDAY 26.</b>					<b>SUNDAY 28.</b>				
	<b>h m s</b>	<b>s</b>	<b>N. ° ' "</b>	<b>48. "</b>		<b>h m s</b>	<b>s</b>	<b>N. ° ' "</b>	<b>0. "</b>
0	4 0 28.39	22.428	N. 16 23 58.9	48.13	0	5 51 48.03	23.782	N. 18 25 3.0	0.21
1	4 2 43.07	22.466	16 28 45.2	47.28	1	5 54 10.77	23.797	18 25 0.9	0.91
2	4 4 57.98	22.503	16 33 26.3	46.43	2	5 56 33.59	23.811	18 24 52.1	2.02
3	4 7 13.10	22.539	16 38 2.3	45.56	3	5 58 56.50	23.825	18 24 36.7	3.12
4	4 9 28.45	22.576	16 42 33.0	44.68	4	6 1 19.49	23.838	18 24 14.7	4.23
5	4 11 44.01	22.612	16 46 58.5	43.81	5	6 3 42.56	23.852	18 23 45.9	5.35
6	4 13 59.79	22.648	16 51 18.7	42.92	6	6 6 5.71	23.864	18 23 10.5	6.47
7	4 16 15.79	22.684	16 55 33.5	42.02	7	6 8 28.93	23.875	18 22 28.3	7.58
8	4 18 32.00	22.719	16 59 42.9	41.12	8	6 10 52.21	23.886	18 21 39.5	8.70
9	4 20 48.42	22.755	17 3 46.9	40.21	9	6 13 15.56	23.897	18 20 43.9	9.83
10	4 23 5.06	22.790	17 7 45.4	39.29	10	6 15 38.97	23.906	18 19 41.6	10.93
11	4 25 21.90	22.824	17 11 38.4	38.37	11	6 18 2.43	23.915	18 18 32.7	12.05
12	4 27 38.95	22.858	17 15 25.8	37.43	12	6 20 25.95	23.923	18 17 17.0	13.18
13	4 29 56.20	22.892	17 19 7.6	36.50	13	6 22 49.51	23.931	18 15 54.5	14.30
14	4 32 13.65	22.926	17 22 43.8	35.55	14	6 25 13.12	23.939	18 14 25.4	15.42
15	4 34 31.31	22.959	17 26 14.2	34.60	15	6 27 36.78	23.946	18 12 49.5	16.54
16	4 36 49.16	22.992	17 29 39.0	33.64	16	6 30 0.47	23.951	18 11 6.9	17.67
17	4 39 7.21	23.024	17 32 57.9	32.68	17	6 32 24.19	23.956	18 9 17.5	18.78
18	4 41 25.45	23.056	17 36 11.1	31.71	18	6 34 47.94	23.961	18 7 21.5	19.89
19	4 43 43.88	23.087	17 39 18.4	30.73	19	6 37 11.72	23.965	18 5 18.8	21.02
20	4 46 2.49	23.118	17 42 19.9	29.75	20	6 39 35.52	23.969	18 3 9.3	22.14
21	4 48 21.29	23.149	17 45 15.4	28.75	21	6 41 59.35	23.972	18 0 53.1	23.25
22	4 50 40.28	23.179	17 48 4.9	27.76	22	6 44 23.18	23.973	17 58 30.3	24.36
23	4 52 59.44	23.208	17 50 48.5	26.77	23	6 46 47.03	23.976	17 56 0.8	25.48
24	4 55 18.78	23.238	N. 17 53 26.1	25.76	24	6 49 10.89	23.977	N. 17 53 24.6	26.59

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 29.</b>					<b>WEDNESDAY 31.</b>				
	h m s	s	N. 17° 53' 24".6	26".59		h m s	s	N. 13° 44' 37".6	74".99
0	6 49 10.89	23.977	17 50 41.7	27.71	0	8 43 25.95	23.478	13 37 5.1	75.83
1	6 51 34.75	23.977	17 47 52.1	28.81	1	8 45 46.77	23.460	13 29 27.6	76.68
2	6 53 58.61	23.977	17 44 56.0	29.91	2	8 48 7.47	23.442	13 21 45.0	77.52
3	6 56 22.47	23.976	17 41 53.2	31.02	3	8 50 28.07	23.425	13 13 57.4	78.34
4	6 58 46.32	23.975	17 38 43.8	32.12	4	8 52 48.57	23.407	13 6 4.9	79.15
5	7 1 10.17	23.973	17 35 27.8	33.22	5	8 55 8.95	23.388	12 58 7.6	79.96
6	7 3 34.00	23.971	17 32 5.2	34.32	6	8 57 29.22	23.370	12 50 5.4	80.76
7	7 5 57.81	23.968	17 28 36.0	35.41	7	8 59 49.39	23.352	12 41 58.5	81.55
8	7 8 21.61	23.964	17 25 0.3	36.49	8	9 2 9.44	23.333	12 33 46.8	82.33
9	7 10 45.38	23.960	17 21 18.1	37.58	9	9 4 29.39	23.315	12 25 30.5	83.10
10	7 13 9.13	23.956	17 17 29.4	38.66	10	9 6 49.22	23.296	12 17 9.6	83.86
11	7 15 32.85	23.951	17 13 34.2	39.74	11	9 9 8.94	23.278	12 8 44.2	84.62
12	7 17 56.54	23.945	17 9 32.5	40.82	12	9 11 28.56	23.260	12 0 14.2	85.37
13	7 20 20.19	23.939	17 5 24.4	41.89	13	9 13 48.06	23.241	11 51 39.8	86.10
14	7 22 43.81	23.933	17 1 9.8	42.96	14	9 16 7.45	23.223	11 43 1.0	86.83
15	7 25 7.38	23.925	16 56 48.9	44.02	15	9 18 26.73	23.204	11 34 17.9	87.54
16	7 27 30.91	23.918	16 52 21.6	45.08	16	9 20 45.90	23.186	11 25 30.5	88.25
17	7 29 54.39	23.909	16 47 48.0	46.13	17	9 23 4.96	23.168	11 16 38.9	88.94
18	7 32 17.82	23.901	16 43 8.0	47.18	18	9 25 23.92	23.150	11 7 43.2	89.63
19	7 34 41.20	23.892	16 38 21.8	48.23	19	9 27 42.76	23.131	10 58 43.3	90.32
20	7 37 4.52	23.882	16 33 29.3	49.27	20	9 30 1.49	23.113	10 49 39.4	90.98
21	7 39 27.78	23.873	16 28 30.6	50.30	21	9 32 20.12	23.095	10 40 31.5	91.64
22	7 41 50.99	23.863	16 23 25.7	51.33	22	9 34 38.63	23.077	10 31 19.7	92.29
23	7 44 14.13	23.851			23	9 36 57.04	23.060		
<b>TUESDAY 30.</b>					<b>THURSDAY, JUNE 1.</b>				
	h m s	s	N. 16° 18' 14".7	52.35		h m s	s	N. 10° 22' 4.0	92.93
0	7 46 37.20	23.840	16 12 57.5	53.37	0	9 39 15.35	23.043		
1	7 49 0.21	23.829	16 2 4.9	54.38					
2	7 51 23.15	23.817	15 56 29.5	55.39					
3	7 53 46.01	23.804	15 50 48.1	56.40					
4	7 56 8.80	23.792	15 45 0.8	57.39					
5	7 58 31.51	23.778	15 39 7.6	58.38					
6	8 0 54.14	23.765	15 33 8.5	59.36					
7	8 3 16.69	23.752	15 27 3.6	60.33					
8	8 5 39.16	23.738	15 20 52.9	61.30					
9	8 8 1.54	23.723	15 14 36.4	62.27					
10	8 10 23.83	23.708	15 8 14.2	63.23					
11	8 12 46.04	23.693	15 1 46.3	64.18					
12	8 15 8.15	23.678	14 55 12.7	65.13					
13	8 17 30.17	23.663	14 48 33.6	66.06					
14	8 19 52.10	23.648	14 41 49.0	66.98					
15	8 22 13.94	23.631	14 34 58.8	67.90					
16	8 24 35.67	23.614	14 28 3.2	68.82					
17	8 26 57.31	23.598	14 21 2.2	69.72					
18	8 29 18.85	23.582	14 13 55.8	70.62					
19	8 31 40.29	23.565	14 6 44.1	71.51					
20	8 34 1.63	23.548	13 59 27.2	72.38					
21	8 36 22.87	23.531	13 52 5.0	73.26					
22	8 38 44.00	23.513		74.13					
23	8 41 5.03	23.496							
24	8 43 25.95	23.478	N. 13° 44' 37".6	74.99					

## PHASES OF THE MOON.

May 4	☾ First Quarter	h m
10	☉ Full Moon	18 6.2
18	☾ Last Quarter	6 16.9
26	● New Moon	6 4.0

May 7	☾ Perigee	h
19	☾ Apogee	19.2
		16.5

## AT APPARENT NOON.

Date.		THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be subtracted from		Var. in 1 hour.
		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.		added to Apparent Time.		
		h m s	s	N. 21 59 2.9		m s	m s	s	
Thur.	1	4 34 15.56	10.224	20.90	1	8.33	2 28.67	0.367	
Frid.	2	4 38 21.13	10.240	22 7 13.1	1	8.38	2 19.68	0.383	
Sat.	3	4 42 27.08	10.255	22 15 0.2	1	8.44	2 10.31	0.398	
Sun.	4	4 46 33.38	10.270	22 22 24.0	1	8.49	2 0.59	0.412	
Mon.	5	4 50 40.02	10.284	22 29 24.2	1	8.54	1 50.54	0.426	
Tues.	6	4 54 46.99	10.297	22 36 0.9	1	8.58	1 40.16	0.439	
Wed.	7	4 58 54.26	10.309	22 42 13.8	1	8.63	1 29.47	0.451	
Thur.	8	5 3 1.82	10.321	22 48 2.8	1	8.67	1 18.49	0.463	
Frid.	9	5 7 9.66	10.332	22 53 27.7	1	8.71	1 7.24	0.474	
Sat.	10	5 11 17.77	10.343	22 58 28.5	1	8.74	0 55.73	0.485	
Sun.	11	5 15 26.12	10.353	23 3 5.1	1	8.77	0 43.97	0.495	
Mon.	12	5 19 34.69	10.362	23 7 17.4	1	8.80	0 31.98	0.504	
Tues.	13	5 23 43.48	10.370	23 11 5.2	1	8.83	0 19.78	0.512	
Wed.	14	5 27 52.45	10.378	23 14 28.5	1	8.85	0 7.40	0.519	
Thur.	15	5 32 1.60	10.384	23 17 27.3	1	8.87	0 5.15	0.526	
Frid.	16	5 36 10.89	10.390	23 20 1.4	1	8.89	0 17.85	0.532	
Sat.	17	5 40 20.30	10.394	23 22 10.8	1	8.90	0 30.68	0.536	
Sun.	18	5 44 29.82	10.398	23 23 55.5	1	8.91	0 43.60	0.540	
Mon.	19	5 48 39.42	10.401	23 25 15.4	1	8.92	0 56.61	0.543	
Tues.	20	5 52 49.07	10.403	23 26 10.5	1	8.92	1 9.67	0.545	
Wed.	21	5 56 58.75	10.403	23 26 40.8	1	8.92	1 22.75	0.545	
Thur.	22	6 1 8.43	10.403	23 26 46.4	1	8.92	1 35.84	0.545	
Frid.	23	6 5 18.09	10.401	23 26 27.1	1	8.91	1 48.91	0.544	
Sat.	24	6 9 27.70	10.399	23 25 43.0	1	8.90	2 1.93	0.541	
Sun.	25	6 13 37.23	10.395	23 24 34.2	1	8.89	2 14.87	0.537	
Mon.	26	6 17 46.66	10.390	23 23 0.7	1	8.87	2 27.70	0.532	
Tues.	27	6 21 55.95	10.384	23 21 2.5	1	8.85	2 40.40	0.526	
Wed.	28	6 26 5.07	10.376	23 18 39.7	1	8.83	2 52.93	0.518	
Thur.	29	6 30 14.00	10.367	23 15 52.4	1	8.80	3 5.27	0.510	
Frid.	30	6 34 22.71	10.358	23 12 40.6	1	8.77	3 17.39	0.500	
Sat.	31	6 38 31.19	10.348	N.23 9 4.4	1	8.74	3 29.28	0.490	

\* Mean Time of the Semidiameter passing may be found by subtracting 0<sup>s</sup>.19 from the Sidereal Time.

## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be subtracted from	Sidereal Time
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*	added to Apparent Time.	
		h m s	N. ° ' "	' "	m s	h m s
Thur.	1	4 34 15.98	N. 21 59 3.8	15 47.70	2 28.66	4 36 44.64
Frid.	2	4 38 21.53	22 7 13.9	15 47.57	2 19.67	4 40 41.19
Sat.	3	4 42 27.45	22 15 0.9	15 47.44	2 10.30	4 44 37.75
Sun.	4	4 46 33.73	22 22 24.6	15 47.31	2 0.58	4 48 34.31
Mon.	5	4 50 40.34	22 29 24.8	15 47.19	1 50.53	4 52 30.86
Tues.	6	4 54 47.27	22 36 1.3	15 47.08	1 40.15	4 56 27.42
Wed.	7	4 58 54.52	22 42 14.1	15 46.96	1 29.46	5 0 23.98
Thur.	8	5 3 2.05	22 48 3.1	15 46.85	1 18.48	5 4 20.53
Frid.	9	5 7 9.86	22 53 28.0	15 46.74	1 7.23	5 8 17.09
Sat.	10	5 11 17.93	22 58 28.7	15 46.64	0 55.72	5 12 13.65
Sun.	11	5 15 26.24	23 3 5.2	15 46.53	0 43.96	5 16 10.20
Mon.	12	5 19 34.78	23 7 17.4	15 46.43	0 31.98	5 20 6.76
Tues.	13	5 23 43.53	23 11 5.2	15 46.33	0 19.78	5 24 3.32
Wed.	14	5 27 52.47	23 14 28.5	15 46.24	0 7.40	5 27 59.87
Thur.	15	5 32 1.58	23 17 27.2	15 46.15	0 5.15	5 31 56.43
Frid.	16	5 36 10.83	23 20 1.3	15 46.07	0 17.85	5 35 52.99
Sat.	17	5 40 20.21	23 22 10.7	15 45.98	0 30.67	5 39 49.54
Sun.	18	5 44 29.69	23 23 55.4	15 45.91	0 43.59	5 43 46.10
Mon.	19	5 48 39.25	23 25 15.3	15 45.83	0 56.60	5 47 42.66
Tues.	20	5 52 48.87	23 26 10.5	15 45.77	1 9.65	5 51 39.21
Wed.	21	5 56 58.51	23 26 40.8	15 45.70	1 22.74	5 55 35.77
Thur.	22	6 1 8.16	23 26 46.4	15 45.64	1 35.83	5 59 32.33
Frid.	23	6 5 17.78	23 26 27.2	15 45.59	1 48.90	6 3 28.88
Sat.	24	6 9 27.35	23 25 43.1	15 45.54	2 1.91	6 7 25.44
Sun.	25	6 13 36.84	23 24 34.3	15 45.50	2 14.85	6 11 22.00
Mon.	26	6 17 46.23	23 23 0.9	15 45.47	2 27.68	6 15 18.56
Tues.	27	6 21 55.48	23 21 2.8	15 45.44	2 40.37	6 19 15.11
Wed.	28	6 26 4.57	23 18 40.0	15 45.41	2 52.90	6 23 11.67
Thur.	29	6 30 13.47	23 15 52.8	15 45.39	3 5.24	6 27 8.22
Frid.	30	6 34 22.15	23 12 41.0	15 45.38	3 17.36	6 31 4.78
Sat.	31	6 38 30.59	N. 23 9 4.9	15 45.37	3 29.25	6 35 1.34

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
				<sup>h</sup> <sup>m</sup> <sup>s</sup>				
1	70° 11' 35".7	S. 0°.56	0.0061348	19 20 4.79	16' 7".98	16' 9".36	59' 6".46	59' 11".49
2	71 9 4.5	0.45	0.0061952	19 16 8.88	16 10.41	16 11.15	59 15.36	59 18.05
3	72 6 32.0	0.32	0.0062538	19 12 12.97	16 11.54	16 11.58	59 19.50	59 19.64
4	73 3 58.2	0.19	0.0063106	19 8 17.06	16 11.24	16 10.49	59 18.38	59 15.64
5	74 1 23.2	S. 0.05	0.0063659	19 4 21.15	16 9.32	16 7.70	59 11.36	59 5.41
6	74 58 47.1	N. 0.08	0.0064197	19 0 25.24	16 5.61	16 3.05	58 57.76	58 48.37
7	75 56 9.9	0.18	0.0064721	18 56 29.33	16 0.00	15 56.51	58 37.23	58 24.43
8	76 53 31.7	0.27	0.0065233	18 52 33.42	15 52.59	15 48.28	58 10.06	57 54.26
9	77 50 52.6	0.34	0.0065732	18 48 37.51	15 43.64	15 38.74	57 37.26	57 19.30
10	78 48 12.7	0.37	0.0066218	18 44 41.60	15 33.64	15 28.45	57 0.64	56 41.63
11	79 45 32.1	0.37	0.0066691	18 40 45.68	15 23.25	15 18.14	56 22.58	56 3.83
12	80 42 50.9	0.35	0.0067150	18 36 49.77	15 13.19	15 8.51	55 45.69	55 28.53
13	81 40 9.2	0.30	0.0067595	18 32 53.86	15 4.15	15 0.22	55 12.58	54 58.17
14	82 37 27.0	0.22	0.0068024	18 28 57.95	14 56.78	14 53.87	54 45.55	54 34.92
15	83 34 44.4	0.14	0.0068436	18 25 2.04	14 51.57	14 49.90	54 26.48	54 20.35
16	84 32 1.4	N. 0.03	0.0068831	18 21 6.13	14 48.90	14 48.59	54 16.69	54 15.56
17	85 29 18.1	S. 0.09	0.0069208	18 17 10.22	14 48.98	14 50.08	54 17.00	54 21.01
18	86 26 34.5	0.21	0.0069564	18 13 14.31	14 51.87	14 54.34	54 27.60	54 36.64
19	87 23 50.7	0.33	0.0069900	18 9 18.40	14 57.46	15 1.18	54 48.07	55 1.69
20	88 21 6.7	0.44	0.0070214	18 5 22.49	15 5.46	15 10.22	55 17.37	55 34.80
21	89 18 22.4	0.54	0.0070505	18 1 26.58	15 15.39	15 20.89	55 53.75	56 13.91
22	90 15 37.9	0.61	0.0070772	17 57 30.66	15 26.62	15 32.47	56 34.91	56 56.34
23	91 12 53.2	0.67	0.0071014	17 53 34.75	15 38.34	15 44.11	57 17.84	57 38.97
24	92 10 8.3	0.71	0.0071230	17 49 38.84	15 49.66	15 54.89	57 59.32	58 18.49
25	93 7 23.1	0.72	0.0071420	17 45 42.93	15 59.70	16 4.00	58 36.11	58 51.88
26	94 4 37.6	0.69	0.0071583	17 41 47.02	16 7.73	16 10.83	59 5.54	59 16.89
27	95 1 51.7	0.63	0.0071720	17 37 51.11	16 13.27	16 15.03	59 25.82	59 32.28
28	95 59 5.5	0.54	0.0071830	17 33 55.20	16 16.14	16 16.60	59 36.34	59 38.04
29	96 56 18.9	0.43	0.0071916	17 29 59.29	16 16.48	16 15.79	59 37.57	59 35.07
30	97 53 31.8	0.31	0.0071978	17 26 3.38	16 14.62	16 13.02	59 30.77	59 24.90
31	98 50 44.3	S. 0.18	0.0072017	17 22 7.47	16 11.03	16 8.72	59 17.63	59 9.15

## MEAN TIME.

Day.	THE MOON'S						
	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
	<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	d	<sup>h</sup> <sup>m</sup>	<sup>h</sup> <sup>m</sup>
1	143 39 0.7	150 42 10.4	S. 3 27 52.4	S. 2 58 51.0	5.75	5 13.7	17 40.1
2	157 45 53.2	164 49 59.4	2 27 2.7	1 52 57.0	6.75	6 6.2	18 32.2
3	171 54 20.8	178 58 48.8	1 17 5.9	S. 0 40 3.4	7.75	6 58.1	19 24.0
4	186 3 14.4	193 7 27.0	S. 0 2 25.1	N. 0 35 13.0	8.75	7 50.0	20 16.0
5	200 11 13.7	207 14 19.3	N. 1 12 14.5	1 48 3.6	9.75	8 42.3	21 8.7
6	214 16 25.6	221 17 11.6	2 22 6.4	2 53 50.8	10.75	9 35.5	22 2.4
7	228 16 13.6	235 13 6.3	3 22 47.9	3 48 32.7	11.75	10 29.6	22 57.0
8	242 7 23.3	248 58 38.1	4 10 44.3	4 29 6.6	12.75	11 24.3	23 51.7
9	255 46 25.1	262 30 21.8	4 43 28.4	4 53 43.4	13.75	12 19.0	* *
10	269 10 8.2	275 45 28.7	4 59 50.3	5 1 51.6	14.75	13 12.5	0 45.9
11	282 16 13.5	288 42 17.4	4 59 54.2	4 54 7.9	15.75	14 4.3	1 38.7
12	295 3 41.7	301 20 33.1	4 44 44.9	4 32 0.0	16.75	14 53.7	2 29.3
13	307 33 4.3	313 41 33.4	4 16 8.6	3 57 27.5	17.75	15 40.8	3 17.6
14	319 46 23.0	325 48 0.4	3 36 13.5	3 12 43.8	18.75	16 25.8	4 3.5
15	331 46 56.8	337 43 46.2	2 47 15.6	2 20 5.5	19.75	17 9.2	4 47.6
16	343 39 5.6	349 33 33.7	1 51 30.3	1 21 46.4	20.75	17 51.7	5 30.5
17	355 27 50.6	1 22 37.5	N. 0 51 10.2	N. 0 19 58.3	21.75	18 34.0	6 12.8
18	7 18 35.5	13 16 25.1	S. 0 11 32.5	S. 0 43 4.9	22.75	19 17.0	6 55.4
19	19 16 46.1	25 20 16.2	1 14 20.7	1 45 1.2	23.75	20 1.4	7 39.0
20	31 27 30.7	37 39 1.2	2 14 46.3	2 43 15.1	24.75	20 47.9	8 24.4
21	43 55 15.3	50 16 35.5	3 10 5.7	3 34 55.0	25.75	21 37.1	9 12.2
22	56 43 18.3	63 15 33.2	3 57 19.7	4 16 55.9	26.75	22 29.1	10 2.7
23	69 53 22.9	76 36 42.2	4 33 20.6	4 46 11.7	27.75	23 23.6	10 56.0
24	83 25 17.8	90 18 48.8	4 55 9.1	4 59 55.9	28.75	* *	11 51.6
25	97 16 47.5	104 18 40.5	5 0 19.0	4 56 10.2	0.32	0 19.9	12 48.5
26	111 23 49.2	118 31 32.6	4 47 26.4	4 34 10.9	1.32	1 17.0	13 45.4
27	125 41 8.2	132 51 54.2	4 16 33.0	3 54 47.7	2.32	2 13.6	14 41.5
28	140 3 10.8	147 14 22.5	3 29 15.9	3 0 23.3	3.32	3 9.1	15 36.3
29	154 24 57.7	161 34 30.3	2 28 39.7	1 54 38.0	4.32	4 3.1	16 29.5
30	168 42 39.4	175 49 9.3	1 18 53.2	S. 0 42 1.4	5.32	4 55.7	17 21.7
31	182 53 49.1	189 56 30.9	S. 0 4 39.3	N. 0 32 37.3	6.32	5 47.5	18 13.3

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 1.</b>					<b>SATURDAY 3.</b>				
	h m s	s	N. 10° 22' 4" 0	92° 93'		h m s	s	N. 2° 15' 0" 9	111° 40'
0	9 39 15.35	23.043	10 12 44.5	93.57	0	11 28 14.17	22.480	1 50 42.1	111.52
1	9 41 33.54	23.024	10 3 21.2	94.18	1	11 30 29.04	22.476	1 39 32.7	111.63
2	9 43 51.64	23.007	9 53 54.3	94.79	2	11 32 43.88	22.473	1 28 22.6	111.72
3	9 46 9.63	22.989	9 44 23.7	95.39	3	11 34 58.71	22.470	1 17 12.0	111.80
4	9 48 27.51	22.973	9 34 49.6	95.98	4	11 37 13.52	22.468	1 6 1.0	111.88
5	9 50 45.30	22.956	9 25 12.0	96.56	5	11 39 28.32	22.466	0 54 49.5	111.94
6	9 53 2.98	22.938	9 15 30.9	97.13	6	11 41 43.11	22.464	0 43 37.7	112.00
7	9 55 20.56	22.922	9 5 46.4	97.69	7	11 43 57.89	22.463	0 32 25.5	112.04
8	9 57 38.05	22.907	8 55 58.6	98.24	8	11 46 12.66	22.461	0 21 13.2	112.07
9	9 59 55.44	22.890	8 46 7.5	98.78	9	11 48 27.42	22.461	N. 0 10 0.7	112.08
10	10 2 12.73	22.873	8 36 13.2	99.32	10	11 50 42.19	22.461	S. 0 1 11.8	112.09
11	10 4 29.92	22.858	8 26 15.7	99.83	11	11 52 56.95	22.461	0 12 24.4	112.09
12	10 6 47.02	22.843	8 16 15.2	100.33	12	11 55 11.72	22.462	0 23 36.9	112.08
13	10 9 4.03	22.828	8 6 11.7	100.83	13	11 57 26.49	22.462	0 34 49.3	112.05
14	10 11 20.95	22.813	7 56 5.2	101.32	14	11 59 41.26	22.463	0 46 1.5	112.01
15	10 13 37.78	22.798	7 45 55.8	101.80	15	12 1 56.05	22.466	0 57 13.4	111.96
16	10 15 54.52	22.783	7 35 43.6	102.27	16	12 4 10.85	22.468	1 8 25.0	111.90
17	10 18 11.17	22.768	7 25 28.6	102.73	17	12 6 25.67	22.471	1 19 36.2	111.83
18	10 20 27.74	22.755	7 15 10.9	103.17	18	12 8 40.50	22.473	1 30 47.0	111.75
19	10 22 44.23	22.741	7 4 50.6	103.60	19	12 10 55.34	22.476	1 41 57.2	111.65
20	10 25 0.63	22.727	6 54 27.7	104.03	20	12 13 10.21	22.480	1 53 6.8	111.55
21	10 27 16.95	22.713	6 44 2.3	104.44	21	12 15 25.10	22.484	2 4 15.8	111.44
22	10 29 33.19	22.701	N. 6 33 34.4	104.84	22	12 17 40.02	22.489	S. 2 15 24.1	111.31
23	10 31 49.36	22.688			23	12 19 54.97	22.493		
<b>FRIDAY 2.</b>					<b>SUNDAY 4.</b>				
0	10 34 5.45	22.676	N. 6 23 4.2	105.23	0	12 22 9.94	22.498	S. 2 26 31.5	111.17
1	10 36 21.47	22.663	6 12 31.6	105.62	1	12 24 24.94	22.503	2 37 38.1	111.02
2	10 38 37.41	22.652	6 1 56.8	105.98	2	12 26 39.98	22.510	2 48 43.8	110.86
3	10 40 53.29	22.641	5 51 19.8	106.35	3	12 28 55.06	22.516	2 59 48.4	110.68
4	10 43 9.10	22.629	5 40 40.6	106.70	4	12 31 10.17	22.522	3 10 52.0	110.51
5	10 45 24.84	22.618	5 29 59.4	107.03	5	12 33 25.32	22.528	3 21 54.5	110.31
6	10 47 40.51	22.608	5 19 16.2	107.37	6	12 35 40.51	22.536	3 32 55.7	110.10
7	10 49 56.13	22.598	5 8 31.0	107.68	7	12 37 55.75	22.544	3 43 55.7	109.88
8	10 52 11.68	22.588	4 57 44.0	107.98	8	12 40 11.04	22.552	3 54 54.3	109.66
9	10 54 27.18	22.578	4 46 55.2	108.28	9	12 42 26.37	22.559	4 5 51.6	109.42
10	10 56 42.62	22.569	4 36 4.6	108.57	10	12 44 41.75	22.568	4 16 47.4	109.17
11	10 58 58.01	22.561	4 25 12.3	108.84	11	12 46 57.18	22.577	4 27 41.6	108.90
12	11 1 13.35	22.553	4 14 18.5	109.10	12	12 49 12.67	22.586	4 38 34.2	108.63
13	11 3 28.64	22.544	4 3 23.1	109.36	13	12 51 28.21	22.595	4 49 25.2	108.35
14	11 5 43.88	22.537	3 52 26.2	109.59	14	12 53 43.81	22.605	5 0 14.4	108.05
15	11 7 59.08	22.529	3 41 28.0	109.83	15	12 55 59.47	22.614	5 11 1.8	107.74
16	11 10 14.23	22.522	3 30 28.3	110.05	16	12 58 15.18	22.624	5 21 47.3	107.43
17	11 12 29.34	22.515	3 19 27.4	110.25	17	13 0 30.96	22.636	5 32 30.9	107.10
18	11 14 44.41	22.509	3 8 25.3	110.44	18	13 2 46.81	22.647	5 43 12.5	106.76
19	11 16 59.45	22.503	2 57 22.1	110.63	19	13 5 2.72	22.658	5 53 52.0	106.41
20	11 19 14.45	22.498	2 46 17.7	110.81	20	13 7 18.70	22.668	6 4 29.4	106.05
21	11 21 29.43	22.493	2 35 12.4	110.97	21	13 9 34.74	22.680	6 15 4.6	105.68
22	11 23 44.37	22.488	2 24 6.1	111.13	22	13 11 50.86	22.692	6 25 37.5	105.29
23	11 25 59.28	22.483	2 12 58.9	111.27	23	13 14 7.05	22.704	6 36 8.1	104.90
24	11 28 14.17	22.480	N. 2 1 50.9	111.40	24	13 16 23.31	22.717	S. 6 46 36.3	104.49



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 5.</b>					<b>WEDNESDAY 7.</b>				
	h m s	s	S. ° ' "	104. "		h m s	s	S. ° ' "	72. "
0	13 16 23.31	22.717	S. 6 46 36.3	104.49	0	15 7 5.85	23.417	S. 14 1 29.2	72.95
1	13 18 39.65	22.729	6 57 2.0	104.07	1	15 9 26.39	23.429	14 8 44.2	72.07
2	13 20 56.06	22.742	7 7 25.1	103.64	2	15 11 47.00	23.442	14 15 54.0	71.18
3	13 23 12.55	22.755	7 17 45.7	103.21	3	15 14 7.69	23.454	14 22 58.4	70.28
4	13 25 29.12	22.768	7 28 3.6	102.76	4	15 16 28.45	23.466	14 29 57.4	69.38
5	13 27 45.77	22.782	7 38 18.8	102.30	5	15 18 49.28	23.478	14 36 51.0	68.47
6	13 30 2.50	22.795	7 48 31.2	101.83	6	15 21 10.18	23.489	14 43 39.1	67.55
7	13 32 10.31	22.809	7 58 40.7	101.34	7	15 23 31.15	23.501	14 50 21.6	66.63
8	13 34 36.21	22.823	8 8 47.3	100.85	8	15 25 52.19	23.511	14 56 58.6	65.70
9	13 36 53.19	22.837	8 18 50.9	100.35	9	15 28 13.28	23.521	15 3 30.0	64.76
10	13 39 10.25	22.851	8 28 51.5	99.83	10	15 30 34.44	23.532	15 9 55.7	63.81
11	13 41 27.40	22.866	8 38 48.9	99.31	11	15 32 55.66	23.542	15 16 15.7	62.86
12	13 43 44.64	22.881	8 48 43.2	98.78	12	15 35 16.94	23.551	15 22 30.0	61.91
13	13 46 1.97	22.895	8 58 34.2	98.23	13	15 37 38.27	23.559	15 28 38.6	60.94
14	13 48 19.38	22.909	9 8 21.9	97.68	14	15 39 59.65	23.568	15 34 41.3	59.97
15	13 50 36.88	22.925	9 18 6.3	97.11	15	15 42 21.08	23.576	15 40 38.2	58.99
16	13 52 54.48	22.940	9 27 47.2	96.53	16	15 44 42.56	23.584	15 46 29.2	58.01
17	13 55 12.16	22.955	9 37 24.6	95.94	17	15 47 4.09	23.592	15 52 14.3	57.03
18	13 57 29.94	22.971	9 46 58.5	95.34	18	15 49 25.66	23.598	15 57 53.5	56.03
19	13 59 47.81	22.986	9 56 28.7	94.73	19	15 51 47.27	23.605	16 3 26.7	55.03
20	14 2 5.77	23.001	10 5 55.3	94.11	20	15 54 8.92	23.611	16 8 53.8	54.03
21	14 4 23.82	23.017	10 15 18.1	93.48	21	15 56 30.60	23.617	16 14 15.0	53.02
22	14 6 41.97	23.033	10 24 37.1	92.85	22	15 58 52.32	23.623	16 19 30.1	52.00
23	14 9 0.21	23.048	S. 10 33 52.3	92.21	23	16 1 14.07	23.627	S. 16 24 39.0	50.98
<b>TUESDAY 6.</b>					<b>THURSDAY 8.</b>				
	h m s	s	S. ° ' "	91. "		h m s	s	S. ° ' "	49. "
0	14 11 18.54	23.063	S. 10 43 3.6	91.54	0	16 3 35.84	23.631	S. 16 29 41.9	49.97
1	14 13 36.96	23.078	10 52 10.8	90.88	1	16 5 57.64	23.635	16 34 38.6	48.93
2	14 15 55.48	23.094	11 1 14.1	90.21	2	16 8 19.46	23.638	16 39 29.1	47.90
3	14 18 14.09	23.110	11 10 13.2	89.51	3	16 10 41.30	23.642	16 44 13.4	46.87
4	14 20 32.80	23.126	11 19 8.2	88.81	4	16 13 3.16	23.644	16 48 51.5	45.83
5	14 22 51.60	23.141	11 27 58.9	88.10	5	16 15 25.03	23.646	16 53 23.3	44.78
6	14 25 10.49	23.156	11 36 45.4	87.39	6	16 17 46.91	23.647	16 57 48.9	43.74
7	14 27 29.47	23.172	11 45 27.6	86.67	7	16 20 8.79	23.648	17 2 8.2	42.68
8	14 29 48.55	23.188	11 54 5.4	85.93	8	16 22 30.68	23.648	17 6 21.1	41.63
9	14 32 7.72	23.203	12 2 38.7	85.18	9	16 24 52.57	23.648	17 10 27.7	40.58
10	14 34 26.98	23.218	12 11 7.5	84.43	10	16 27 14.46	23.648	17 14 28.0	39.52
11	14 36 46.33	23.233	12 19 31.8	83.67	11	16 29 36.34	23.646	17 18 21.9	38.45
12	14 39 5.77	23.248	12 27 51.5	82.89	12	16 31 58.21	23.644	17 22 9.4	37.38
13	14 41 25.31	23.263	12 36 6.5	82.11	13	16 34 20.07	23.642	17 25 50.5	36.32
14	14 43 44.93	23.278	12 44 16.8	81.32	14	16 36 41.91	23.638	17 29 25.2	35.25
15	14 46 4.64	23.293	12 52 22.3	80.52	15	16 39 3.73	23.635	17 32 53.5	34.18
16	14 48 24.44	23.307	13 0 23.0	79.72	16	16 41 25.53	23.631	17 36 15.3	33.10
17	14 50 44.32	23.321	13 8 18.9	78.90	17	16 43 47.30	23.627	17 39 30.7	32.03
18	14 53 4.29	23.335	13 16 9.8	78.08	18	16 46 9.05	23.622	17 42 39.6	30.94
19	14 55 24.34	23.349	13 23 55.8	77.24	19	16 48 30.76	23.615	17 45 42.0	29.86
20	14 57 44.48	23.363	13 31 36.7	76.39	20	16 50 52.43	23.609	17 48 37.9	28.78
21	15 0 4.70	23.378	13 39 12.5	75.54	21	16 53 14.07	23.603	17 51 27.4	27.71
22	15 2 25.01	23.391	13 46 43.2	74.69	22	16 55 35.66	23.595	17 54 10.4	26.62
23	15 4 45.39	23.403	13 54 8.8	73.83	23	16 57 57.21	23.587	17 56 46.8	25.53
24	15 7 5.85	23.417	S. 14 1 29.2	72.95	24	17 0 18.71	23.578	S. 17 59 16.8	24.45

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>FRIDAY 9.</b>					<b>SUNDAY 11.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	17 0 18.71	23.578	S. 17 59 16.8	24.45	0	18 51 25.28	22.521	S. 17 54 7.9	25.43
1	17 2 40.15	23.569	18 1 40.2	23.36	1	18 53 40.30	22.488	17 51 32.5	26.36
2	17 5 1.54	23.559	18 3 57.1	22.28	2	18 55 55.13	22.454	17 48 51.6	27.28
3	17 7 22.86	23.548	18 6 7.5	21.19	3	18 58 9.75	22.420	17 46 5.1	28.22
4	17 9 44.12	23.538	18 8 11.4	20.11	4	19 0 24.17	22.387	17 43 13.0	29.14
5	17 12 5.32	23.527	18 10 8.8	19.02	5	19 2 38.39	22.352	17 40 15.4	30.06
6	17 14 26.44	23.514	18 11 59.7	17.93	6	19 4 52.39	22.317	17 37 12.3	30.97
7	17 16 47.49	23.502	18 13 44.0	16.85	7	19 7 6.19	22.283	17 34 3.8	31.87
8	17 19 8.46	23.488	18 15 21.9	15.77	8	19 9 19.78	22.248	17 30 49.9	32.77
9	17 21 29.35	23.474	18 16 53.2	14.68	9	19 11 33.16	22.212	17 27 30.6	33.65
10	17 23 50.15	23.460	18 18 18.0	13.60	10	19 13 46.32	22.176	17 24 6.1	34.53
11	17 26 10.87	23.445	18 19 36.4	12.52	11	19 15 59.27	22.140	17 20 36.2	35.42
12	17 28 31.49	23.429	18 20 48.3	11.44	12	19 18 12.00	22.104	17 17 1.1	36.29
13	17 30 52.02	23.413	18 21 53.7	10.36	13	19 20 24.52	22.068	17 13 20.7	37.16
14	17 33 12.45	23.396	18 22 52.6	9.28	14	19 22 36.82	22.031	17 9 35.2	38.01
15	17 35 32.77	23.378	18 23 45.0	8.20	15	19 24 48.89	21.994	17 5 44.6	38.86
16	17 37 52.99	23.361	18 24 31.0	7.13	16	19 27 0.75	21.958	17 1 48.9	39.70
17	17 40 13.10	23.343	18 25 10.6	6.07	17	19 29 12.39	21.921	16 57 48.2	40.54
18	17 42 33.10	23.323	18 25 43.8	4.99	18	19 31 23.80	21.883	16 53 42.4	41.38
19	17 44 52.98	23.303	18 26 10.5	3.93	19	19 33 34.99	21.847	16 49 31.7	42.20
20	17 47 12.74	23.283	18 26 30.9	2.86	20	19 35 45.96	21.809	16 45 16.0	43.02
21	17 49 32.38	23.263	18 26 44.8	1.79	21	19 37 56.70	21.771	16 40 55.5	43.83
22	17 51 51.90	23.242	18 26 52.4	0.74	22	19 40 7.21	21.733	16 36 30.1	44.63
23	17 54 11.28	23.220	S. 18 26 53.7	0.32	23	19 42 17.50	21.697	S. 16 31 59.9	45.43
<b>SATURDAY 10.</b>					<b>MONDAY 12.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	17 56 30.54	23.198	S. 18 26 48.6	1.37	0	19 44 27.57	21.658	S. 16 27 25.0	46.22
1	17 58 49.66	23.174	18 26 37.3	2.42	1	19 46 37.40	21.620	16 22 45.3	47.00
2	18 1 8.63	23.151	18 26 19.6	3.48	2	19 48 47.01	21.583	16 18 1.0	47.78
3	18 3 27.47	23.128	18 25 55.6	4.52	3	19 50 56.39	21.544	16 13 12.0	48.55
4	18 5 46.16	23.103	18 25 25.4	5.55	4	19 53 5.54	21.506	16 8 18.4	49.31
5	18 8 4.71	23.078	18 24 49.0	6.58	5	19 55 14.46	21.468	16 3 20.3	50.06
6	18 10 23.10	23.053	18 24 6.4	7.62	6	19 57 23.16	21.430	15 58 17.7	50.81
7	18 12 41.34	23.027	18 23 17.6	8.64	7	19 59 31.62	21.392	15 53 10.6	51.55
8	18 14 59.42	23.000	18 22 22.7	9.67	8	20 1 39.86	21.354	15 47 59.1	52.28
9	18 17 17.34	22.973	18 21 21.6	10.69	9	20 3 47.87	21.315	15 42 43.2	53.02
10	18 19 35.10	22.947	18 20 14.4	11.71	10	20 5 55.64	21.277	15 37 22.9	53.73
11	18 21 52.70	22.918	18 19 1.1	12.72	11	20 8 3.19	21.240	15 31 58.4	54.43
12	18 24 10.12	22.890	18 17 41.7	13.73	12	20 10 10.52	21.202	15 26 29.7	55.14
13	18 26 27.38	22.862	18 16 16.4	14.73	13	20 12 17.61	21.163	15 20 56.7	55.85
14	18 28 44.47	22.833	18 14 45.0	15.73	14	20 14 24.47	21.125	15 15 19.5	56.54
15	18 31 1.38	22.803	18 13 7.6	16.72	15	20 16 31.11	21.088	15 9 38.2	57.22
16	18 33 18.11	22.773	18 11 24.4	17.70	16	20 18 37.52	21.049	15 3 52.9	57.89
17	18 35 34.66	22.743	18 9 35.2	18.69	17	20 20 43.70	21.011	14 58 3.5	58.57
18	18 37 51.03	22.713	18 7 40.1	19.67	18	20 22 49.65	20.973	14 52 10.1	59.23
19	18 40 7.21	22.682	18 5 39.1	20.64	19	20 24 55.38	20.937	14 46 12.7	59.88
20	18 42 23.21	22.651	18 3 32.4	21.60	20	20 27 0.89	20.899	14 40 11.5	60.53
21	18 44 39.02	22.618	18 1 19.9	22.57	21	20 29 6.17	20.862	14 34 6.4	61.18
22	18 46 54.63	22.586	17 59 1.6	23.53	22	20 31 11.23	20.824	14 27 57.4	61.81
23	18 49 10.05	22.554	17 56 37.6	24.48	23	20 33 16.06	20.788	14 21 44.7	62.43
24	18 51 25.28	22.521	S. 17 54 7.9	25.43	24	20 35 20.68	20.751	S. 14 15 28.2	63.06

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>TUESDAY 13.</b>					<b>THURSDAY 15.</b>				
	<b>h m s</b>	<b>s</b>				<b>h m s</b>	<b>s</b>		
0	20 35 20.68	20.751	S. 14 15 28.2	63.06	0	22 11 8.29	19.283	S. 8 14 18.0	84.95
1	20 37 25.07	20.713	14 9 8.0	63.67	1	22 13 3.92	19.262	8 5 47.4	85.25
2	20 39 29.24	20.677	14 2 44.2	64.27	2	22 14 59.43	19.241	7 57 15.0	85.55
3	20 41 33.19	20.641	13 56 16.8	64.87	3	22 16 54.81	19.219	7 48 40.8	85.85
4	20 43 36.93	20.604	13 49 45.8	65.47	4	22 18 50.06	19.198	7 40 4.8	86.14
5	20 45 40.44	20.568	13 43 11.2	66.05	5	22 20 45.19	19.178	7 31 27.1	86.42
6	20 47 43.74	20.533	13 36 33.2	66.63	6	22 22 40.20	19.159	7 22 47.8	86.68
7	20 49 46.83	20.497	13 29 51.7	67.20	7	22 24 35.10	19.140	7 14 6.9	86.96
8	20 51 49.70	20.461	13 23 6.8	67.76	8	22 26 29.88	19.121	7 5 24.3	87.23
9	20 53 52.36	20.426	13 16 18.6	68.32	9	22 28 24.55	19.103	6 56 40.1	87.48
10	20 55 54.81	20.391	13 9 27.0	68.87	10	22 30 19.11	19.085	6 47 54.5	87.73
11	20 57 57.05	20.356	13 2 32.2	69.41	11	22 32 13.57	19.067	6 39 7.3	87.99
12	20 59 59.08	20.321	12 55 34.1	69.95	12	22 34 7.92	19.050	6 30 18.6	88.23
13	21 2 0.90	20.287	12 48 32.8	70.48	13	22 36 2.17	19.033	6 21 28.5	88.47
14	21 4 2.52	20.253	12 41 28.3	71.00	14	22 37 56.32	19.017	6 12 37.0	88.70
15	21 6 3.94	20.219	12 34 20.8	71.52	15	22 39 50.38	19.002	6 3 44.1	88.93
16	21 8 5.15	20.185	12 27 10.1	72.03	16	22 41 44.34	18.987	5 54 49.9	89.14
17	21 10 6.16	20.152	12 19 56.5	72.53	17	22 43 38.22	18.973	5 45 54.4	89.36
18	21 12 6.97	20.118	12 12 39.8	73.03	18	22 45 32.01	18.958	5 36 57.6	89.58
19	21 14 7.58	20.086	12 5 20.2	73.52	19	22 47 25.72	18.944	5 27 59.5	89.78
20	21 16 8.00	20.054	11 57 57.6	74.00	20	22 49 19.34	18.930	5 19 0.2	89.98
21	21 18 8.23	20.022	11 50 32.2	74.48	21	22 51 12.88	18.918	5 9 59.8	90.17
22	21 20 8.26	19.989	11 43 3.9	74.94	22	22 53 6.35	18.906	5 0 58.2	90.36
23	21 22 8.10	19.958	S. 11 35 32.9	75.40	23	22 54 59.75	18.894	S. 4 51 55.5	90.54
<b>WEDNESDAY 14.</b>					<b>FRIDAY 16.</b>				
0	21 24 7.75	19.927	S. 11 27 59.1	75.87	0	22 56 53.08	18.883	S. 4 42 51.7	90.73
1	21 26 7.22	19.896	11 20 22.5	76.32	1	22 58 46.34	18.872	4 33 46.8	90.90
2	21 28 6.50	19.865	11 12 43.3	76.76	2	23 0 39.54	18.862	4 24 40.9	91.07
3	21 30 5.60	19.835	11 5 1.4	77.19	3	23 2 32.68	18.852	4 15 34.0	91.23
4	21 32 4.52	19.805	10 57 17.0	77.62	4	23 4 25.76	18.842	4 6 26.1	91.39
5	21 34 3.26	19.775	10 49 30.0	78.05	5	23 6 18.78	18.833	3 57 17.3	91.54
6	21 36 1.82	19.746	10 41 40.4	78.47	6	23 8 11.75	18.824	3 48 7.6	91.69
7	21 38 0.21	19.718	10 33 48.4	78.88	7	23 10 4.67	18.817	3 38 57.0	91.83
8	21 39 58.43	19.689	10 25 53.9	79.29	8	23 11 57.55	18.809	3 29 45.6	91.97
9	21 41 56.48	19.661	10 17 56.9	79.69	9	23 13 50.38	18.802	3 20 33.4	92.10
10	21 43 54.36	19.633	10 9 57.6	80.08	10	23 15 43.17	18.796	3 11 20.4	92.23
11	21 45 52.07	19.605	10 1 56.0	80.46	11	23 17 35.93	18.790	3 2 6.6	92.35
12	21 47 49.62	19.578	9 53 52.1	80.85	12	23 19 28.65	18.784	2 52 52.2	92.47
13	21 49 47.00	19.551	9 45 45.8	81.23	13	23 21 21.34	18.779	2 43 37.0	92.58
14	21 51 44.23	19.525	9 37 37.4	81.59	14	23 23 14.00	18.774	2 34 21.2	92.69
15	21 53 41.30	19.499	9 29 26.7	81.96	15	23 25 6.63	18.770	2 25 4.7	92.79
16	21 55 38.22	19.474	9 21 13.9	82.31	16	23 26 59.24	18.767	2 15 47.7	92.88
17	21 57 34.99	19.448	9 12 59.0	82.66	17	23 28 51.83	18.764	2 6 30.1	92.98
18	21 59 31.60	19.423	9 4 42.0	83.01	18	23 30 44.41	18.762	1 57 11.9	93.07
19	22 1 28.07	19.399	8 56 22.9	83.35	19	23 32 36.97	18.759	1 47 53.3	93.14
20	22 3 24.39	19.375	8 48 1.8	83.68	20	23 34 29.52	18.758	1 38 34.2	93.22
21	22 5 20.57	19.352	8 39 38.8	84.00	21	23 36 22.07	18.757	1 29 14.6	93.30
22	22 7 16.62	19.329	8 31 13.8	84.33	22	23 38 14.61	18.757	1 19 54.6	93.37
23	22 9 12.52	19.306	8 22 46.8	84.65	23	23 40 7.15	18.757	1 10 34.2	93.43
24	22 11 8.29	19.283	S. 8 14 18.0	84.95	24	23 41 59.69	18.757	S. 1 1 13.5	93.48

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
SATURDAY 17.					MONDAY 19.				
	h m s	s				h m s	s		
0	23 41 59.69	18.757	S. 0° 13' 5"	93.48	0	1 13 3.45	19.379	N. 6° 24' 7.7"	89.99
1	23 43 52.24	18.758	0 51 52.5	93.53	1	1 14 59.80	19.403	6 33 7.0	89.78
2	23 45 44.79	18.760	0 42 31.1	93.58	2	1 16 56.29	19.428	6 42 5.0	89.56
3	23 47 37.36	18.762	0 33 9.5	93.62	3	1 18 52.94	19.455	6 51 1.7	89.34
4	23 49 29.94	18.764	0 23 47.7	93.66	4	1 20 49.75	19.482	6 59 57.1	89.12
5	23 51 22.53	18.768	0 14 25.6	93.69	5	1 22 46.72	19.508	7 8 51.1	88.88
6	23 53 15.15	18.772	S. 0 5 3.4	93.72	6	1 24 43.85	19.536	7 17 43.6	88.63
7	23 55 7.79	18.775	N. 0 4 19.0	93.73	7	1 26 41.15	19.563	7 26 34.6	88.38
8	23 57 0.45	18.780	0 13 41.4	93.75	8	1 28 38.61	19.591	7 35 24.1	88.13
9	23 58 53.15	18.786	0 23 4.0	93.77	9	1 30 36.24	19.620	7 44 12.1	87.87
10	0 0 45.88	18.791	0 32 26.6	93.77	10	1 32 34.05	19.649	7 52 58.5	87.60
11	0 2 38.64	18.797	0 41 49.2	93.77	11	1 34 32.03	19.679	8 1 43.3	87.32
12	0 4 31.44	18.803	0 51 11.8	93.77	12	1 36 30.20	19.709	8 10 26.3	87.03
13	0 6 24.28	18.811	1 0 34.4	93.75	13	1 38 28.54	19.739	8 19 7.7	86.75
14	0 8 17.17	18.819	1 9 56.8	93.73	14	1 40 27.07	19.770	8 27 47.3	86.45
15	0 10 10.11	18.827	1 19 19.2	93.72	15	1 42 25.78	19.802	8 36 25.1	86.15
16	0 12 3.09	18.835	1 28 41.5	93.69	16	1 44 24.69	19.833	8 45 1.1	85.84
17	0 13 56.13	18.844	1 38 3.5	93.66	17	1 46 23.78	19.865	8 53 35.2	85.53
18	0 15 49.22	18.854	1 47 25.4	93.63	18	1 48 23.07	19.898	9 2 7.4	85.20
19	0 17 42.38	18.865	1 56 47.1	93.59	19	1 50 22.56	19.932	9 10 37.6	84.87
20	0 19 35.60	18.875	2 6 8.5	93.54	20	1 52 22.25	19.964	9 19 5.8	84.53
21	0 21 28.88	18.886	2 15 29.6	93.48	21	1 54 22.13	19.998	9 27 32.0	84.19
22	0 23 22.23	18.898	2 24 50.3	93.43	22	1 56 22.22	20.033	9 35 56.1	83.84
23	0 25 15.65	18.910	N. 2 34 10.7	93.37	23	1 58 22.52	20.068	N. 9 44 18.1	83.48
SUNDAY 18.					TUESDAY 20.				
	h m s	s				h m s	s		
0	0 27 9.15	18.923	N. 2 43 30.7	93.30	0	2 0 23.03	20.102	N. 9 52 37.9	83.12
1	0 29 2.73	18.937	2 52 50.3	93.23	1	2 2 23.74	20.137	10 0 55.5	82.74
2	0 30 56.39	18.950	3 2 9.5	93.15	2	2 4 24.67	20.173	10 9 10.8	82.37
3	0 32 50.13	18.964	3 11 28.1	93.06	3	2 6 25.82	20.209	10 17 23.9	81.98
4	0 34 43.96	18.979	3 20 46.2	92.98	4	2 8 27.18	20.245	10 25 34.6	81.58
5	0 36 37.88	18.994	3 30 3.8	92.88	5	2 10 28.76	20.283	10 33 42.8	81.18
6	0 38 31.89	19.010	3 39 20.8	92.78	6	2 12 30.57	20.320	10 41 48.7	80.77
7	0 40 26.00	19.027	3 48 37.2	92.68	7	2 14 32.60	20.357	10 49 52.1	80.35
8	0 42 20.21	19.043	3 57 52.9	92.56	8	2 16 34.85	20.394	10 57 52.9	79.93
9	0 44 14.52	19.060	4 7 7.9	92.44	9	2 18 37.33	20.433	11 5 51.2	79.49
10	0 46 8.93	19.078	4 16 22.2	92.33	10	2 20 40.05	20.472	11 13 46.8	79.05
11	0 48 3.46	19.097	4 25 35.8	92.20	11	2 22 42.99	20.510	11 21 39.8	78.61
12	0 49 58.09	19.115	4 34 48.6	92.06	12	2 24 46.17	20.549	11 29 30.1	78.15
13	0 51 52.84	19.135	4 44 0.5	91.92	13	2 26 49.58	20.588	11 37 17.6	77.68
14	0 53 47.71	19.155	4 53 11.6	91.78	14	2 28 53.23	20.628	11 45 2.3	77.22
15	0 55 42.70	19.175	5 2 21.8	91.63	15	2 30 57.12	20.669	11 52 44.2	76.74
16	0 57 37.81	19.195	5 11 31.1	91.47	16	2 33 1.26	20.709	12 0 23.2	76.25
17	0 59 33.04	19.216	5 20 39.4	91.30	17	2 35 5.63	20.749	12 7 59.2	75.75
18	1 1 28.40	19.238	5 29 46.7	91.13	18	2 37 10.25	20.791	12 15 32.2	75.25
19	1 3 23.90	19.261	5 38 53.0	90.96	19	2 39 15.12	20.832	12 23 2.2	74.73
20	1 5 19.53	19.283	5 47 58.2	90.78	20	2 41 20.23	20.873	12 30 29.0	74.22
21	1 7 15.30	19.306	5 57 2.3	90.59	21	2 43 25.60	20.915	12 37 52.8	73.70
22	1 9 11.20	19.329	6 6 5.3	90.40	22	2 45 31.21	20.957	12 45 13.4	73.16
23	1 11 7.25	19.354	6 15 7.1	90.20	23	2 47 37.08	20.999	12 52 30.7	72.61
24	1 13 3.45	19.379	N. 6 24 7.7	89.99	24	2 49 43.20	21.041	N. 12 59 44.7	72.06

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 21.</b>					<b>FRIDAY 23.</b>				
	h m s	s	N. 12 59 44.7	72.06		h m s	s	N. 17 25 57.8	35.60
0	2 49 43.20	21.041			0	4 35 47.12	23.136		
1	2 51 49.57	21.083	13 6 55.4	71.50	1	4 38 6.06	23.176	17 29 28.5	34.63
2	2 53 56.20	21.127	13 14 2.7	70.93	2	4 40 25.23	23.215	17 32 53.4	33.67
3	2 56 3.09	21.170	13 21 6.6	70.36	3	4 42 44.64	23.254	17 36 12.5	32.69
4	2 58 10.24	21.212	13 28 7.0	69.78	4	4 45 4.28	23.293	17 39 25.7	31.71
5	3 0 17.64	21.256	13 35 3.9	69.18	5	4 47 24.16	23.332	17 42 33.0	30.72
6	3 2 25.31	21.300	13 41 57.2	68.58	6	4 49 44.27	23.370	17 45 34.3	29.72
7	3 4 33.24	21.343	13 48 46.9	67.97	7	4 52 4.60	23.407	17 48 29.6	28.72
8	3 6 41.43	21.388	13 55 32.8	67.34	8	4 54 25.15	23.444	17 51 18.9	27.70
9	3 8 49.89	21.432	14 2 15.0	66.72	9	4 56 45.93	23.482	17 54 2.0	26.68
10	3 10 58.61	21.475	14 8 53.5	66.09	10	4 59 6.93	23.518	17 56 39.0	25.65
11	3 13 7.59	21.520	14 15 28.1	65.44	11	5 1 28.14	23.553	17 59 9.8	24.62
12	3 15 16.85	21.565	14 21 58.8	64.78	12	5 3 49.57	23.589	18 1 34.4	23.58
13	3 17 26.37	21.608	14 28 25.5	64.13	13	5 6 11.21	23.623	18 3 52.8	22.54
14	3 19 36.15	21.653	14 34 48.3	63.46	14	5 8 33.05	23.658	18 6 4.9	21.48
15	3 21 46.20	21.698	14 41 7.0	62.78	15	5 10 55.10	23.692	18 8 10.6	20.42
16	3 23 56.52	21.743	14 47 21.6	62.09	16	5 12 17.35	23.725	18 10 9.9	19.36
17	3 26 7.11	21.788	14 53 32.1	61.40	17	5 15 39.80	23.758	18 12 2.9	18.29
18	3 28 17.97	21.833	14 59 38.4	60.69	18	5 18 2.44	23.789	18 13 49.4	17.21
19	3 30 29.10	21.877	15 5 40.4	59.98	19	5 20 25.27	23.821	18 15 29.4	16.13
20	3 32 40.49	21.922	15 11 38.1	59.25	20	5 22 48.29	23.852	18 17 3.0	15.05
21	3 34 52.16	21.967	15 17 31.4	58.52	21	5 25 11.49	23.883	18 18 30.0	13.95
22	3 37 4.09	22.012	15 23 20.3	57.78	22	5 27 34.88	23.913	18 19 50.4	12.85
23	3 39 16.30	22.057	N. 15 29 4.8	57.04	23	5 29 58.44	23.941	N. 18 21 4.2	11.75
<b>THURSDAY 22.</b>					<b>SATURDAY 24.</b>				
	h m s	s	N. 15 34 44.8	56.28		h m s	s	N. 18 22 11.4	10.64
0	3 41 28.77	22.100			0	5 32 22.17	23.969		
1	3 43 41.50	22.145	15 40 20.2	55.52	1	5 34 46.07	23.997	18 23 11.9	9.53
2	3 45 54.51	22.191	15 45 51.0	54.74	2	5 37 10.14	24.024	18 24 5.7	8.41
3	3 48 7.79	22.236	15 51 17.1	53.96	3	5 39 34.36	24.051	18 24 52.8	7.29
4	3 50 21.34	22.280	15 56 38.5	53.17	4	5 41 58.75	24.078	18 25 33.2	6.17
5	3 52 35.15	22.323	16 1 55.1	52.37	5	5 44 23.29	24.103	18 26 6.8	5.03
6	3 54 49.22	22.368	16 7 6.9	51.57	6	5 46 47.98	24.127	18 26 33.6	3.90
7	3 57 3.57	22.413	16 12 13.9	50.75	7	5 49 12.81	24.151	18 26 53.6	2.76
8	3 59 18.18	22.457	16 17 15.9	49.92	8	5 51 37.79	24.174	18 27 6.7	1.62
9	4 1 33.05	22.500	16 22 12.9	49.08	9	5 54 2.90	24.197	18 27 13.0	0.48
10	4 3 48.18	22.544	16 27 4.9	48.25	10	5 56 28.15	24.218	18 27 12.5	0.67
11	4 6 3.58	22.589	16 31 51.9	47.40	11	5 58 53.52	24.239	18 27 5.0	1.82
12	4 8 19.25	22.633	16 36 33.7	46.53	12	6 1 19.02	24.261	18 26 50.7	2.97
13	4 10 35.17	22.675	16 41 10.3	45.67	13	6 3 44.65	24.281	18 26 29.4	4.13
14	4 12 51.35	22.718	16 45 41.7	44.80	14	6 6 10.39	24.298	18 26 1.2	5.28
15	4 15 7.79	22.762	16 50 7.9	43.92	15	6 8 36.23	24.317	18 25 26.0	6.45
16	4 17 24.49	22.804	16 54 28.7	43.03	16	6 11 2.19	24.335	18 24 43.8	7.61
17	4 19 41.44	22.847	16 58 44.2	42.13	17	6 13 28.25	24.352	18 23 54.7	8.77
18	4 21 58.65	22.889	17 2 54.2	41.21	18	6 15 54.41	24.368	18 22 58.6	9.93
19	4 24 16.11	22.930	17 6 58.7	40.29	19	6 18 20.66	24.383	18 21 55.5	11.11
20	4 26 33.81	22.972	17 10 57.7	39.38	20	6 20 47.00	24.398	18 20 45.3	12.28
21	4 28 51.77	23.014	17 14 51.2	38.45	21	6 23 13.43	24.412	18 19 28.2	13.44
22	4 31 9.98	23.055	17 18 39.1	37.51	22	6 25 39.94	24.424	18 18 4.0	14.62
23	4 33 28.43	23.095	17 22 21.3	36.56	23	6 28 6.52	24.437	18 16 32.8	15.78
24	4 35 47.12	23.136	N. 17 25 57.8	35.60	24	6 30 33.18	24.448	N. 18 14 54.6	16.96

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 25.</b>					<b>TUESDAY 27.</b>				
	h m s	s	N. 18 14 54.6	16.96		h m s	s	N. 14 42 26.2	69.84
0	6 30 33.18	24.448	18 13 9.3	18.13	0	8 27 53.18	24.198	14 35 24.3	70.78
1	6 32 59.90	24.458	18 11 17.0	19.31	1	8 30 18.31	24.179	14 28 16.8	71.73
2	6 35 26.68	24.469	18 9 17.6	20.48	2	8 32 43.33	24.161	14 21 3.5	72.67
3	6 37 53.53	24.479	18 7 11.2	21.65	3	8 35 8.24	24.142	14 13 44.7	73.59
4	6 40 20.43	24.487	18 4 57.8	22.82	4	8 37 33.03	24.121	14 6 20.4	74.51
5	6 42 47.37	24.494	18 2 37.4	23.99	5	8 39 57.69	24.101	13 58 50.6	75.43
6	6 45 14.36	24.502	18 0 9.9	25.17	6	8 42 22.24	24.081	13 51 15.3	76.33
7	6 47 41.40	24.509	17 57 35.4	26.33	7	8 44 46.66	24.060	13 43 34.7	77.21
8	6 50 8.47	24.514	17 54 54.0	27.49	8	8 47 10.96	24.039	13 35 48.8	78.09
9	6 52 35.57	24.518	17 52 5.5	28.67	9	8 49 35.13	24.018	13 27 57.6	78.97
10	6 55 2.69	24.523	17 49 10.0	29.83	10	8 51 59.17	23.997	13 20 1.2	79.83
11	6 57 29.84	24.527	17 46 7.6	30.98	11	8 54 23.09	23.975	13 11 59.7	80.68
12	6 59 57.01	24.529	17 42 58.2	32.15	12	8 56 46.87	23.952	13 3 53.1	81.52
13	7 2 24.19	24.531	17 39 41.8	33.31	13	8 59 10.51	23.930	12 55 41.5	82.34
14	7 4 51.38	24.533	17 36 18.5	34.46	14	9 1 34.03	23.908	12 47 25.0	83.17
15	7 7 18.58	24.533	17 32 48.3	35.62	15	9 3 57.41	23.885	12 30 37.2	84.78
16	7 9 45.77	24.533	17 29 11.1	36.77	16	9 6 20.65	23.863	12 22 6.2	85.56
17	7 12 12.97	24.532	17 25 27.1	37.90	17	9 8 43.76	23.840	12 13 30.5	86.34
18	7 14 40.15	24.529	17 17 38.6	40.19	18	9 11 6.73	23.817	12 4 50.1	87.11
19	7 17 7.32	24.527	17 13 34.0	41.33	19	9 13 29.56	23.793	11 56 5.2	87.87
20	7 19 34.48	24.525	17 9 22.7	42.45	20	9 15 52.25	23.770	11 47 15.7	88.62
21	7 22 1.62	24.521	16 56 8.2	43.58	21	9 18 14.80	23.748	11 38 21.8	89.35
22	7 24 28.73	24.517			22	9 20 37.22	23.724		
23	7 26 55.82	24.512			23	9 22 59.49	23.699		
<b>MONDAY 26.</b>					<b>WEDNESDAY 28.</b>				
	h m s	s	N. 17 0 39.8	44.70		h m s	s	N. 11 29 23.5	90.07
0	7 29 22.87	24.506	16 56 8.2	45.82	0	9 25 21.61	23.676	11 20 20.9	90.78
1	7 31 49.89	24.499	16 51 29.9	46.93	1	9 27 43.60	23.653	11 11 14.1	91.48
2	7 34 16.86	24.492	16 46 45.0	48.04	2	9 30 5.44	23.628	11 2 3.1	92.18
3	7 36 43.79	24.485	16 41 53.4	49.14	3	9 32 27.14	23.605	10 52 47.9	92.87
4	7 39 10.68	24.477	16 36 55.3	50.23	4	9 34 48.70	23.582	10 43 28.7	93.53
5	7 41 37.51	24.468	16 31 50.6	51.33	5	9 37 10.12	23.558	10 34 5.6	94.18
6	7 44 4.29	24.458	16 26 39.3	52.42	6	9 39 31.40	23.534	10 24 38.5	94.83
7	7 46 31.01	24.448	16 21 21.5	53.50	7	9 41 52.53	23.510	10 15 7.6	95.47
8	7 48 57.67	24.438	16 15 57.3	54.57	8	9 44 13.52	23.487	10 5 32.9	96.09
9	7 51 24.27	24.427	16 10 26.7	55.64	9	9 46 34.37	23.463	9 55 54.5	96.70
10	7 53 50.79	24.414	16 4 49.6	56.71	10	9 48 55.07	23.439	9 46 12.5	97.30
11	7 56 17.24	24.403	15 59 6.2	57.75	11	9 51 15.64	23.416	9 36 26.9	97.89
12	7 58 43.62	24.390	15 53 16.6	58.80	12	9 53 36.06	23.392	9 26 37.8	98.47
13	8 1 9.92	24.377	15 47 20.6	59.85	13	9 55 56.34	23.368	9 16 45.3	99.03
14	8 3 36.14	24.363	15 41 18.4	60.88	14	9 58 16.48	23.346	9 6 49.4	99.58
15	8 6 2.27	24.348	15 35 10.1	61.90	15	10 0 36.49	23.322	8 56 50.3	100.13
16	8 8 28.31	24.333	15 22 35.0	62.92	16	10 2 56.35	23.298	8 46 47.9	100.66
17	8 10 54.27	24.318	15 16 8.4	63.93	17	10 5 16.07	23.276	8 36 42.4	101.18
18	8 13 20.13	24.302	15 9 35.8	64.93	18	10 7 35.66	23.253	8 26 33.8	101.68
19	8 15 45.89	24.286	15 2 57.2	65.93	19	10 9 55.11	23.231	8 16 22.2	102.18
20	8 18 11.56	24.269	14 56 12.7	66.92	20	10 12 14.43	23.208	8 6 7.7	102.66
21	8 20 37.12	24.252	14 49 22.4	67.90	21	10 14 33.61	23.186	7 55 50.3	103.13
22	8 23 2.58	24.235		68.88	22	10 16 52.66	23.163	7 45 30.1	103.59
23	8 25 27.94	24.217			23	10 19 11.57	23.141		
24	8 27 53.18	24.198			24	10 21 30.35	23.120		

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
THURSDAY 29.					FRIDAY 30.				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	10 21 30.35	23.120	N. 7 35 7.2	104.03	0	11 16 25.57	22.675	N. 3 15 26.4	111.23
1	10 23 49.01	23.098	7 24 41.7	104.47	1	11 18 41.58	22.661	3 4 18.6	111.38
2	10 26 7.53	23.076	7 14 13.5	104.90	2	11 20 57.50	22.647	2 53 9.9	111.52
3	10 28 25.92	23.055	7 3 42.9	105.31	3	11 23 13.34	22.633	2 42 0.4	111.65
4	10 30 44.19	23.035	6 53 9.8	105.71	4	11 25 29.10	22.619	2 30 50.1	111.77
5	10 33 2.34	23.014	6 42 34.4	106.10	5	11 27 44.77	22.606	2 19 39.2	111.87
6	10 35 20.36	22.993	6 31 56.6	106.47	6	11 30 0.37	22.594	2 8 27.7	111.96
7	10 37 38.26	22.973	6 21 16.7	106.83	7	11 32 15.90	22.582	1 57 15.7	112.04
8	10 39 56.04	22.953	6 10 34.6	107.19	8	11 34 31.35	22.569	1 46 3.2	112.12
9	10 42 13.70	22.934	5 59 50.4	107.53	9	11 36 46.73	22.558	1 34 50.3	112.18
10	10 44 31.25	22.915	5 49 4.2	107.86	10	11 39 2.04	22.547	1 23 37.0	112.23
11	10 46 48.68	22.895	5 38 16.1	108.18	11	11 41 17.29	22.536	1 12 23.5	112.27
12	10 49 5.99	22.876	5 27 26.1	108.48	12	11 43 32.47	22.525	1 1 9.8	112.29
13	10 51 23.19	22.858	5 16 34.3	108.78	13	11 45 47.59	22.515	0 49 56.0	112.30
14	10 53 40.29	22.840	5 5 40.8	109.06	14	11 48 2.65	22.506	0 38 42.2	112.31
15	10 55 57.27	22.822	4 54 45.6	109.33	15	11 50 17.66	22.497	0 27 28.3	112.30
16	10 58 14.15	22.804	4 43 48.9	109.58	16	11 52 32.61	22.488	0 16 14.6	112.28
17	11 0 30.92	22.787	4 32 50.6	109.83	17	11 54 47.51	22.479	N. 0 5 1.0	112.25
18	11 2 47.59	22.770	4 21 50.9	110.07	18	11 57 2.36	22.471	S. 0 6 12.4	112.21
19	11 5 4.16	22.753	4 10 49.8	110.28	19	11 59 17.16	22.463	0 17 25.5	112.16
20	11 7 20.63	22.738	3 59 47.5	110.49	20	12 1 31.92	22.456	0 28 38.3	112.09
21	11 9 37.01	22.722	3 48 43.9	110.70	21	12 3 46.63	22.448	0 39 50.6	112.02
22	11 11 53.29	22.706	3 37 39.1	110.88	22	12 6 1.30	22.442	0 51 2.5	111.93
23	11 14 9.48	22.690	3 26 33.3	111.06	23	12 8 15.94	22.438	1 2 13.8	111.83
24	11 16 25.57	22.675	N. 3 15 26.4	111.23	24	12 10 30.55	22.432	S. 1 13 24.4	111.72

PHASES OF THE MOON.

June 2		☾ First Quarter	- - - - -	h m
9		☉ Full Moon	- - - - -	6 10.1
17		☾ Last Quarter	- - - - -	3 57.9
24		● New Moon	- - - - -	0 3.2
				16 19.7
June 3		☾ Perigee	- - - - -	h
16		☾ Apogee	- - - - -	7.2
28		☾ Perigee	- - - - -	11.3
				15.4

## AT APPARENT NOON.

Date.	THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var. in 1 hour.
	Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
	h m s	s	° ' "	"	m s	m s	s
Sat.	1 6 38 31.19	10.348	N.23 9 4.4	9.51	1 8.74	3 29.28	0.490
Sun.	2 6 42 39.40	10.336	23 5 3.9	10.53	1 8.71	3 40.90	0.478
Mon.	3 6 46 47.32	10.324	23 0 39.2	11.53	1 8.67	3 52.23	0.466
Tues.	4 6 50 54.93	10.310	22 55 50.5	12.53	1 8.63	4 3.26	0.453
Wed.	5 6 55 2.22	10.297	22 50 37.8	13.53	1 8.59	4 13.96	0.439
Thur.	6 6 59 9.17	10.282	22 45 1.2	14.52	1 8.54	4 24.33	0.425
Frid.	7 7 3 15.77	10.267	22 39 0.9	15.50	1 8.49	4 34.34	0.409
Sat.	8 7 7 21.99	10.251	22 32 37.1	16.48	1 8.44	4 43.98	0.394
Sun.	9 7 11 27.83	10.235	22 25 49.9	17.45	1 8.38	4 53.23	0.377
Mon.	10 7 15 33.26	10.218	22 18 39.4	18.42	1 8.33	5 2.09	0.360
Tues.	11 7 19 38.29	10.201	22 11 5.7	19.38	1 8.27	5 10.53	0.343
Wed.	12 7 23 42.89	10.182	22 3 9.2	20.33	1 8.20	5 18.55	0.325
Thur.	13 7 27 47.04	10.164	21 54 49.9	21.27	1 8.14	5 26.14	0.307
Frid.	14 7 31 50.75	10.145	21 46 8.1	22.21	1 8.07	5 33.27	0.287
Sat.	15 7 35 53.99	10.125	21 37 3.9	23.14	1 8.00	5 39.93	0.268
Sun.	16 7 39 56.76	10.105	21 27 37.6	24.05	1 7.93	5 46.13	0.248
Mon.	17 7 43 59.03	10.084	21 17 49.3	24.96	1 7.86	5 51.83	0.227
Tues.	18 7 48 0.80	10.063	21 7 39.3	25.86	1 7.79	5 57.03	0.206
Wed.	19 7 52 2.07	10.042	20 57 7.8	26.76	1 7.71	6 1.73	0.185
Thur.	20 7 56 2.81	10.020	20 46 15.0	27.64	1 7.63	6 5.90	0.163
Frid.	21 8 0 3.01	9.997	20 35 1.2	28.51	1 7.55	6 9.54	0.140
Sat.	22 8 4 2.66	9.974	20 23 26.6	29.37	1 7.47	6 12.63	0.117
Sun.	23 8 8 1.76	9.951	20 11 31.4	30.22	1 7.39	6 15.16	0.094
Mon.	24 8 12 0.29	9.926	19 59 16.0	31.06	1 7.31	6 17.13	0.070
Tues.	25 8 15 58.23	9.902	19 46 40.7	31.88	1 7.23	6 18.51	0.045
Wed.	26 8 19 55.58	9.877	19 33 45.6	32.70	1 7.14	6 19.30	0.020
Thur.	27 8 23 52.33	9.852	19 20 31.0	33.51	1 7.06	6 19.49	0.005
Frid.	28 8 27 48.46	9.826	19 6 57.3	34.30	1 6.98	6 19.07	0.030
Sat.	29 8 31 43.97	9.800	18 53 4.7	35.08	1 6.89	6 18.03	0.056
Sun.	30 8 35 38.86	9.774	18 38 53.5	35.85	1 6.80	6 16.37	0.082
Mon.	31 8 39 33.12	9.748	18 24 24.0	36.60	1 6.72	6 14.08	0.108
Tues.	32 8 43 26.76	9.722	N.18 9 36.5	37.35	1 6.63	6 11.17	0.134

\* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.



## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be added to Apparent Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
		h m s	N. ° ' "	' "	m s	h m s
Sat.	1	6 38 30.59	N. 23 ° 9 ' 4.9	15 45.37	3 29.25	6 35 1.34
Sun.	2	6 42 38.76	23 5 4.5	15 45.37	3 40.87	6 38 57.90
Mon.	3	6 46 46.65	23 0 40.0	15 45.37	3 52.20	6 42 54.45
Tues.	4	6 50 54.24	22 55 51.3	15 45.37	4 3.23	6 46 51.01
Wed.	5	6 55 1.50	22 50 38.7	15 45.38	4 13.93	6 50 47.56
Thur.	6	6 59 8.42	22 45 2.3	15 45.39	4 24.30	6 54 44.12
Frid.	7	7 3 14.99	22 39 2.1	15 45.41	4 34.31	6 58 40.68
Sat.	8	7 7 21.18	22 32 38.4	15 45.43	4 43.95	7 2 37.23
Sun.	9	7 11 26.99	22 25 51.3	15 45.45	4 53.20	7 6 33.79
Mon.	10	7 15 32.41	22 18 40.9	15 45.47	5 2.06	7 10 30.35
Tues.	11	7 19 37.41	22 11 7.4	15 45.50	5 10.51	7 14 26.90
Wed.	12	7 23 41.98	22 3 11.0	15 45.53	5 18.53	7 18 23.46
Thur.	13	7 27 46.12	21 54 51.9	15 45.57	5 26.11	7 22 20.02
Frid.	14	7 31 49.81	21 46 10.2	15 45.61	5 33.24	7 26 16.57
Sat.	15	7 35 53.04	21 37 6.1	15 45.65	5 39.91	7 30 13.13
Sun.	16	7 39 55.79	21 27 39.9	15 45.69	5 46.10	7 34 9.68
Mon.	17	7 43 58.05	21 17 51.7	15 45.74	5 51.81	7 38 6.24
Tues.	18	7 47 59.81	21 7 41.8	15 45.80	5 57.01	7 42 2.80
Wed.	19	7 52 1.06	20 57 10.4	15 45.86	6 1.71	7 45 59.35
Thur.	20	7 56 1.79	20 46 17.8	15 45.92	6 5.88	7 49 55.91
Frid.	21	8 0 1.98	20 35 4.1	15 45.99	6 9.52	7 53 52.46
Sat.	22	8 4 1.63	20 23 29.6	15 46.07	6 12.61	7 57 49.02
Sun.	23	8 8 0.73	20 11 34.6	15 46.15	6 15.15	8 1 45.57
Mon.	24	8 11 59.25	19 59 19.3	15 46.23	6 17.12	8 5 42.13
Tues.	25	8 15 57.19	19 46 44.0	15 46.32	6 18.51	8 9 38.68
Wed.	26	8 19 54.54	19 33 49.0	15 46.42	6 19.30	8 13 35.24
Thur.	27	8 23 51.29	19 20 34.5	15 46.52	6 19.49	8 17 31.80
Frid.	28	8 27 47.42	19 7 0.9	15 46.63	6 19.07	8 21 28.35
Sat.	29	8 31 42.94	18 53 8.4	15 46.74	6 18.04	8 25 24.90
Sun.	30	8 35 37.84	18 38 57.3	15 46.86	6 16.38	8 29 21.46
Mon.	31	8 39 32.11	18 24 27.8	15 46.98	6 14.09	8 33 18.02
Tues.	32	8 43 25.75	N. 18 9 40.3	15 47.11	6 11.18	8 37 14.57

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
			Noon.	h m s				
1	98 50 44.3	S. 0.18	0.0072017	17 22 7.47	16 11.03	16 8.72	59 17.63	59 9.15
2	99 47 56.4	S. 0.04	0.0072035	17 18 11.56	16 6.12	16 3.29	58 59.65	58 49.26
3	100 45 8.1	N. 0.09	0.0072033	17 14 15.65	16 0.24	15 57.01	58 38.10	58 26.26
4	101 42 19.6	0.21	0.0072013	17 10 19.73	15 53.61	15 50.06	58 13.80	58 0.77
5	102 39 30.8	0.30	0.0071976	17 6 23.82	15 46.36	15 42.54	57 47.23	57 33.22
6	103 36 41.8	0.37	0.0071923	17 2 27.91	15 38.60	15 34.55	57 18.78	57 3.96
7	104 33 52.7	0.41	0.0071855	16 58 32.00	15 30.43	15 26.25	56 48.85	56 33.54
8	105 31 3.7	0.42	0.0071771	16 54 36.09	15 22.04	15 17.85	56 18.12	56 2.77
9	106 28 14.7	0.40	0.0071673	16 50 40.18	15 13.73	15 9.70	55 47.64	55 32.89
10	107 25 25.9	0.35	0.0071561	16 46 44.27	15 5.84	15 2.19	55 18.74	55 5.38
11	108 22 37.5	0.28	0.0071433	16 42 48.36	14 58.81	14 55.77	54 53.01	54 41.87
12	109 19 49.3	0.19	0.0071290	16 38 52.45	14 53.12	14 50.91	54 32.15	54 24.05
13	110 17 1.6	N. 0.08	0.0071131	16 34 56.54	14 49.19	14 48.02	54 17.76	54 13.47
14	111 14 14.4	S. 0.03	0.0070955	16 31 0.63	14 47.43	14 47.46	54 11.31	54 11.43
15	112 11 27.7	0.15	0.0070761	16 27 4.72	14 48.15	14 49.51	54 13.94	54 18.92
16	113 8 41.7	0.27	0.0070549	16 23 8.81	14 51.55	14 54.28	54 26.40	54 36.42
17	114 5 56.3	0.38	0.0070317	16 19 12.90	14 57.70	15 1.79	54 48.95	55 3.91
18	115 3 11.5	0.48	0.0070066	16 15 16.99	15 6.50	15 11.80	55 21.17	55 40.59
19	116 0 27.5	0.56	0.0069793	16 11 21.08	15 17.62	15 23.90	56 1.95	56 24.93
20	116 57 44.2	0.62	0.0069497	16 7 25.17	15 30.52	15 37.40	56 49.19	57 14.38
21	117 55 1.7	0.66	0.0069179	16 3 29.26	15 44.39	15 51.35	57 39.99	58 5.50
22	118 52 20.0	0.67	0.0068836	15 59 33.35	15 58.14	16 4.62	58 30.40	58 54.13
23	119 49 38.9	0.64	0.0068467	15 55 37.44	16 10.61	16 15.99	59 16.09	59 35.77
24	120 46 58.5	0.59	0.0068073	15 51 41.53	16 20.59	16 24.33	59 52.67	60 6.39
25	121 44 18.8	0.51	0.0067653	15 47 45.62	16 27.14	16 28.94	60 16.67	60 23.27
26	122 41 39.7	0.39	0.0067207	15 43 49.71	16 29.73	16 29.52	60 26.16	60 25.40
27	123 39 1.1	0.27	0.0066735	15 39 53.80	16 28.37	16 26.36	60 21.19	60 13.80
28	124 36 23.1	S. 0.13	0.0066240	15 35 57.89	16 23.56	16 20.12	60 3.56	59 50.94
29	125 33 45.6	N. 0.02	0.0065722	15 32 1.99	16 16.13	16 11.72	59 36.31	59 20.13
30	126 31 8.5	0.15	0.0065182	15 28 6.08	16 6.99	16 2.05	59 2.81	58 44.74
31	127 28 32.0	0.27	0.0064623	15 24 10.17	15 57.00	15 51.91	58 26.22	58 7.58
32	128 25 56.0	N. 0.38	0.0064046	15 20 14.26	15 46.86	15 41.86	57 49.03	57 30.74

## MEAN TIME.

Day.	THE MOON'S						
	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	182° 53' 49" 1	189° 56' 30" 9	S. 0° 4' 39" 3	N. 0° 32' 37" 3	6·32	h m 5 47·5	h m 18 13·3
2	196 57 10·0	203 55 43·5	N. 1 9 13·1	1 44 35·1	7·32	6 39·1	19 5·0
3	210 52 9·3	217 46 24·8	2 18 12·1	2 49 35·4	8·32	7 31·1	19 57·3
4	224 38 27·1	231 28 11·7	3 18 19·2	3 44 1·0	9·32	8 23·7	20 50·3
5	238 15 32·9	245 0 22·6	4 6 21·6	4 25 5·6	10·32	9 17·0	21 43·8
6	251 42 32·1	258 21 51·1	4 40 1·3	4 51 0·7	11·32	10 10·5	22 37·2
7	264 58 9·0	271 31 14·8	4 57 59·9	5 0 59·1	12·32	11 3·8	23 30·0
8	278 0 58·9	284 27 13·3	5 0 1·3	4 55 13·6	13·32	11 55·8	* *
9	290 49 51·9	297 8 51·8	4 46 45·4	4 34 49·3	14·32	12 46·1	0 21·2
10	303 24 13·5	309 36 1·3	4 19 39·4	4 1 31·5	15·32	13 34·3	1 10·5
11	315 44 23·6	321 49 32·7	3 40 42·9	3 17 31·2	16·32	14 20·3	1 57·5
12	327 51 45·4	333 51 22·4	2 52 14·9	2 25 12·0	17·32	15 4·5	2 42·6
13	339 48 47·9	345 44 30·2	1 56 41·1	1 26 59·9	18·32	15 47·5	3 26·1
14	351 38 59·9	357 32 51·5	N. 0 56 26·3	N. 0 25 17·7	19·32	16 29·8	4 8·7
15	3 26 41·1	9 21 6·9	S. 0 6 8·5	S. 0 37 35·1	20·32	17 12·1	4 50·9
16	15 16 48·7	21 14 26·8	1 8 44·8	1 39 20·0	21·32	17 55·3	5 33·6
17	27 14 42·4	33 18 15·5	2 9 2·8	2 37 34·4	22·32	18 40·1	6 17·5
18	39 25 45·3	45 37 48·9	3 4 35·6	3 29 46·1	23·32	19 27·2	7 3·4
19	51 55 0·3	58 17 49·3	3 52 44·9	4 13 10·4	24·32	20 17·1	7 51·8
20	64 46 40·3	71 21 51·1	4 30 40·3	4 44 52·7	25·32	21 9·9	8 43·1
21	78 3 32·0	84 51 44·4	4 55 26·1	5 2 0·3	26·32	22 5·3	9 37·3
22	91 46 20·4	98 47 1·8	5 4 17·9	5 2 4·8	27·32	23 2·5	10 33·7
23	105 53 20·6	113 4 39·6	4 55 11·5	4 43 34·3	28·32	* *	11 31·5
24	120 20 13·3	127 39 9·5	4 27 16·2	4 6 27·2	29·32	0 0·5	12 29·4
25	135 0 31·7	142 23 21·3	3 41 24·8	3 12 33·4	0·97	0 58·0	13 26·4
26	149 46 40·1	157 9 32·6	2 40 23·8	2 5 32·1	1·97	1 54·4	14 22·0
27	164 31 7·9	171 50 41·6	1 28 37·9	S. 0 50 23·1	2·97	2 49·3	15 16·3
28	179 7 36·0	186 21 21·7	S. 0 11 30·2	N. 0 27 19·1	3·97	3 43·0	16 9·5
29	193 31 36·1	200 38 4·1	N. 1 5 24·9	1 42 10·4	4·97	4 35·8	17 2·1
30	207 40 36·6	214 39 9·7	2 17 2·5	2 49 31·6	5·97	5 28·3	17 54·5
31	221 33 43·7	228 24 21·6	3 19 12·6	3 45 44·1	6·97	6 20·8	18 47·2
32	235 11 8·7	241 54 11·7	N. 4 8 49·0	N. 4 28 14·1	7·97	7 13·6	19 40·0

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in $ro^m$ .	Declination.	Var. in $ro^m$ .	Hour.	Right Ascension.	Var. in $ro^m$ .	Declination.	Var. in $ro^m$ .
<b>SATURDAY 1.</b>					<b>MONDAY 3.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 10 30.55	22.432	S. 1 13 24.4	111.72	0	13 58 13.28	22.573	S. 9 37 12.5	94.33
1	12 12 45.12	22.425	1 24 34.4	111.61	1	14 0 28.75	22.583	9 46 36.7	93.73
2	12 14 59.65	22.420	1 35 43.7	111.48	2	14 2 44.28	22.593	9 55 57.3	93.13
3	12 17 14.16	22.417	1 46 52.1	111.33	3	14 4 59.87	22.603	10 5 14.2	92.51
4	12 19 28.65	22.413	1 57 59.7	111.18	4	14 7 15.52	22.613	10 14 27.4	91.88
5	12 21 43.11	22.408	2 9 6.3	111.02	5	14 9 31.23	22.623	10 23 36.8	91.24
6	12 23 57.55	22.405	2 20 11.9	110.85	6	14 11 47.00	22.634	10 32 42.3	90.60
7	12 26 11.97	22.402	2 31 16.5	110.67	7	14 14 2.84	22.645	10 41 44.0	89.95
8	12 28 26.37	22.399	2 42 19.9	110.47	8	14 16 18.74	22.656	10 50 41.7	89.29
9	12 30 40.76	22.398	2 53 22.1	110.26	9	14 18 34.71	22.668	10 59 35.5	88.62
10	12 32 55.14	22.395	3 4 23.0	110.04	10	14 20 50.75	22.678	11 8 25.2	87.94
11	12 35 9.50	22.393	3 15 22.6	109.82	11	14 23 6.85	22.689	11 17 10.8	87.26
12	12 37 23.86	22.393	3 26 20.8	109.58	12	14 25 23.02	22.700	11 25 52.3	86.57
13	12 39 38.22	22.393	3 37 17.6	109.33	13	14 27 39.25	22.712	11 34 29.6	85.86
14	12 41 52.57	22.392	3 48 12.8	109.08	14	14 29 55.56	22.723	11 43 2.6	85.15
15	12 44 6.92	22.392	3 59 6.5	108.81	15	14 32 11.93	22.734	11 51 31.4	84.43
16	12 46 21.27	22.393	4 9 58.5	108.53	16	14 34 28.37	22.746	11 59 55.8	83.71
17	12 48 35.63	22.394	4 20 48.8	108.24	17	14 36 44.88	22.758	12 8 15.9	82.98
18	12 50 50.00	22.395	4 31 37.4	107.94	18	14 39 1.46	22.769	12 16 31.5	82.23
19	12 53 4.37	22.396	4 42 24.1	107.63	19	14 41 18.11	22.781	12 24 42.6	81.48
20	12 55 18.75	22.398	4 53 8.9	107.30	20	14 43 34.83	22.793	12 32 49.2	80.72
21	12 57 33.14	22.400	5 3 51.7	106.98	21	14 45 51.62	22.804	12 40 51.2	79.96
22	12 59 47.55	22.403	5 14 32.6	106.64	22	14 48 8.48	22.816	12 48 48.7	79.18
23	13 2 1.97	22.405	S. 5 25 11.4	106.28	23	14 50 25.41	22.828	S. 12 56 41.4	78.40
<b>SUNDAY 2.</b>					<b>TUESDAY 4.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	13 4 16.41	22.408	S. 5 35 48.0	105.92	0	14 52 42.41	22.839	S. 13 4 29.5	77.62
1	13 6 30.87	22.412	5 46 22.4	105.55	1	14 54 59.48	22.850	13 12 12.8	76.82
2	13 8 45.35	22.416	5 56 54.6	105.17	2	14 57 16.61	22.862	13 19 51.3	76.01
3	13 10 59.86	22.421	6 7 24.5	104.78	3	14 59 33.82	22.873	13 27 24.9	75.20
4	13 13 14.40	22.425	6 17 52.0	104.38	4	15 1 51.09	22.884	13 34 53.7	74.39
5	13 15 28.96	22.430	6 28 17.0	103.96	5	15 4 8.43	22.896	13 42 17.6	73.56
6	13 17 43.56	22.435	6 38 39.5	103.54	6	15 6 25.84	22.908	13 49 36.4	72.73
7	13 19 58.18	22.440	6 48 59.5	103.12	7	15 8 43.32	22.918	13 56 50.3	71.90
8	13 22 12.84	22.446	6 59 16.9	102.68	8	15 11 0.86	22.928	14 3 59.2	71.05
9	13 24 27.53	22.452	7 9 31.6	102.23	9	15 13 18.46	22.939	14 11 2.9	70.19
10	13 26 42.26	22.458	7 19 43.6	101.77	10	15 15 36.13	22.951	14 18 1.5	69.34
11	13 28 57.03	22.465	7 29 52.8	101.29	11	15 17 53.87	22.962	14 24 55.0	68.48
12	13 31 11.84	22.472	7 39 59.1	100.82	12	15 20 11.67	22.972	14 31 43.2	67.60
13	13 33 26.69	22.479	7 50 2.6	100.33	13	15 22 29.53	22.983	14 38 26.2	66.73
14	13 35 41.59	22.487	8 0 3.0	99.83	14	15 24 47.46	22.993	14 45 3.9	65.84
15	13 37 56.53	22.494	8 10 0.5	99.32	15	15 27 5.44	23.003	14 51 36.3	64.95
16	13 40 11.52	22.503	8 19 54.9	98.80	16	15 29 23.49	23.013	14 58 3.3	64.06
17	13 42 26.56	22.511	8 29 46.1	98.28	17	15 31 41.59	23.022	15 4 25.0	63.16
18	13 44 41.65	22.519	8 39 34.2	97.74	18	15 33 59.75	23.032	15 10 41.2	62.24
19	13 46 56.79	22.528	8 49 19.0	97.19	19	15 36 17.97	23.041	15 16 51.9	61.33
20	13 49 11.98	22.536	8 59 0.5	96.64	20	15 38 36.24	23.049	15 22 57.2	60.42
21	13 51 27.22	22.545	9 8 38.7	96.08	21	15 40 54.56	23.058	15 28 56.9	59.49
22	13 53 42.52	22.554	9 18 13.4	95.50	22	15 43 12.93	23.067	15 34 51.1	58.57
23	13 55 57.87	22.563	9 27 44.7	94.92	23	15 45 31.36	23.075	15 40 39.7	57.63
24	13 58 13.28	22.573	S. 9 37 12.5	94.33	24	15 47 49.83	23.083	S. 15 46 22.6	56.68

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 5.</b>					<b>FRIDAY 7.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	15 47 49.83	23.083	S. 15 46 22.6	50.68	0	17 38 52.25	23.018	S. 18 23 16.0	7.90
1	15 50 8.35	23.091	15 51 59.9	55.74	1	17 41 10.31	23.004	18 24 0.3	6.87
2	15 52 26.92	23.098	15 57 31.5	54.79	2	17 43 28.30	22.992	18 24 38.4	5.83
3	15 54 45.53	23.105	16 2 57.4	53.83	3	17 45 46.21	22.978	18 25 10.2	4.78
4	15 57 4.18	23.113	16 8 17.5	52.88	4	17 48 4.03	22.963	18 25 35.8	3.75
5	15 59 22.88	23.119	16 13 31.9	51.92	5	17 50 21.77	22.948	18 25 55.2	2.73
6	16 1 41.61	23.125	16 18 40.5	50.94	6	17 52 39.41	22.933	18 26 8.5	1.69
7	16 4 0.38	23.131	16 23 43.2	49.97	7	17 54 56.96	22.918	18 26 15.5	0.66
8	16 6 19.18	23.136	16 28 40.1	48.99	8	17 57 14.42	22.902	18 26 16.4	0.37
9	16 8 38.01	23.142	16 33 31.1	48.02	9	17 59 31.78	22.885	18 26 11.1	1.39
10	16 10 56.88	23.147	16 38 16.3	47.03	10	18 1 49.04	22.868	18 25 59.7	2.41
11	16 13 15.77	23.151	16 42 55.5	46.03	11	18 4 6.19	22.849	18 25 42.2	3.43
12	16 15 34.69	23.156	16 47 28.7	45.04	12	18 6 23.23	22.831	18 25 18.5	4.45
13	16 17 53.64	23.160	16 51 56.0	44.05	13	18 8 40.16	22.813	18 24 48.8	5.46
14	16 20 12.61	23.163	16 56 17.3	43.05	14	18 10 56.98	22.794	18 24 13.0	6.48
15	16 22 31.60	23.166	17 0 32.6	42.04	15	18 13 13.69	22.774	18 23 31.1	7.48
16	16 24 50.60	23.168	17 4 41.8	41.03	16	18 15 30.27	22.754	18 22 43.2	8.48
17	16 27 9.62	23.171	17 8 45.0	40.03	17	18 17 46.74	22.734	18 21 49.3	9.48
18	16 29 28.65	23.173	17 12 42.2	39.02	18	18 20 3.08	22.713	18 20 49.4	10.48
19	16 31 47.69	23.174	17 16 33.2	38.00	19	18 22 19.29	22.691	18 19 43.5	11.48
20	16 34 6.74	23.176	17 20 18.2	36.98	20	18 24 35.37	22.669	18 18 31.6	12.48
21	16 36 25.80	23.177	17 23 57.0	35.96	21	18 26 51.32	22.647	18 17 13.8	13.46
22	16 38 44.86	23.176	17 27 29.7	34.93	22	18 29 7.14	22.624	18 15 50.1	14.44
23	16 41 3.91	23.176	S. 17 30 56.2	33.91	23	18 31 22.81	22.601	S. 18 14 20.5	15.43
<b>THURSDAY 6.</b>					<b>SATURDAY 8.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	16 43 22.97	23.176	S. 17 34 16.6	32.88	0	18 33 38.35	22.578	S. 18 12 45.0	16.40
1	16 45 42.02	23.174	17 37 30.8	31.85	1	18 35 53.74	22.553	18 11 3.7	17.38
2	16 48 1.06	23.173	17 40 38.8	30.82	2	18 38 8.99	22.530	18 9 16.5	18.34
3	16 50 20.09	23.171	17 43 40.6	29.78	3	18 40 24.10	22.505	18 7 23.6	19.30
4	16 52 39.11	23.168	17 46 36.2	28.75	4	18 42 39.05	22.479	18 5 24.9	20.27
5	16 54 58.11	23.166	17 49 25.6	27.72	5	18 44 53.85	22.453	18 3 20.4	21.22
6	16 57 17.10	23.163	17 52 8.8	26.67	6	18 47 8.49	22.428	18 1 10.3	22.17
7	16 59 36.06	23.158	17 54 45.7	25.63	7	18 49 22.98	22.402	17 58 54.4	23.12
8	17 1 54.99	23.153	17 57 16.4	24.60	8	18 51 37.31	22.375	17 56 32.9	24.05
9	17 4 13.90	23.149	17 59 40.9	23.55	9	18 53 51.48	22.348	17 54 5.8	24.99
10	17 6 32.78	23.144	18 1 59.0	22.51	10	18 56 5.49	22.321	17 51 33.0	25.92
11	17 8 51.63	23.138	18 4 11.0	21.48	11	18 58 19.33	22.293	17 48 54.7	26.84
12	17 11 10.44	23.132	18 6 16.7	20.43	12	19 0 33.00	22.264	17 46 10.9	27.77
13	17 13 29.21	23.125	18 8 16.1	19.38	13	19 2 46.50	22.236	17 43 21.5	28.68
14	17 15 47.94	23.118	18 10 9.2	18.33	14	19 4 59.83	22.208	17 40 26.7	29.58
15	17 18 6.62	23.110	18 11 56.1	17.29	15	19 7 12.99	22.178	17 37 26.5	30.49
16	17 20 25.26	23.102	18 13 36.7	16.24	16	19 9 25.97	22.149	17 34 20.8	31.40
17	17 22 43.84	23.093	18 15 11.0	15.20	17	19 11 38.78	22.119	17 31 9.7	32.29
18	17 25 2.37	23.083	18 16 39.1	14.16	18	19 13 51.40	22.089	17 27 53.3	33.18
19	17 27 20.84	23.074	18 18 0.9	13.11	19	19 16 3.85	22.060	17 24 31.6	34.05
20	17 29 39.26	23.064	18 19 16.4	12.07	20	19 18 16.12	22.029	17 21 4.7	34.93
21	17 31 57.61	23.053	18 20 25.7	11.03	21	19 20 28.20	21.998	17 17 32.5	35.81
22	17 34 15.89	23.041	18 21 28.7	9.98	22	19 22 40.09	21.967	17 13 55.0	36.68
23	17 36 34.10	23.030	18 22 25.5	8.94	23	19 24 51.80	21.936	17 10 12.4	37.53
24	17 38 52.25	23.018	S. 18 23 16.0	7.90	24	19 27 3.32	21.904	S. 17 6 24.7	38.38

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 9.</b>					<b>TUESDAY 11.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	19 27 3.32	21.904	S. 17 6 24.7	38.38	0	21 8 20.32	20.292	S. 12 36 25.5	71.48
1	19 29 14.65	21.873	17 2 31.9	39.23	1	21 10 21.97	20.260	12 29 15.0	72.00
2	19 31 25.79	21.841	16 58 34.0	40.07	2	21 12 23.44	20.228	12 22 1.5	72.50
3	19 33 36.74	21.808	16 54 31.1	40.90	3	21 14 24.71	20.197	12 14 45.0	73.01
4	19 35 47.49	21.776	16 50 23.2	41.73	4	21 16 25.80	20.165	12 7 25.4	73.52
5	19 37 58.05	21.744	16 46 10.3	42.55	5	21 18 26.69	20.133	12 0 2.8	74.01
6	19 40 8.42	21.712	16 41 52.6	43.37	6	21 20 27.40	20.103	11 52 37.3	74.48
7	19 42 18.59	21.678	16 37 29.9	44.18	7	21 22 27.92	20.071	11 45 9.0	74.96
8	19 44 28.55	21.644	16 33 2.5	44.98	8	21 24 28.25	20.040	11 37 37.8	75.44
9	19 46 38.32	21.612	16 28 30.2	45.78	9	21 26 28.40	20.010	11 30 3.7	75.91
10	19 48 47.90	21.579	16 23 53.2	46.57	10	21 28 28.37	19.980	11 22 26.9	76.36
11	19 50 57.27	21.545	16 19 11.4	47.35	11	21 30 28.16	19.950	11 14 47.4	76.81
12	19 53 6.44	21.512	16 14 25.0	48.12	12	21 32 27.77	19.920	11 7 5.2	77.26
13	19 55 15.41	21.478	16 9 34.0	48.89	13	21 34 27.20	19.891	10 59 20.3	77.70
14	19 57 24.17	21.443	16 4 38.3	49.66	14	21 36 26.46	19.862	10 51 32.8	78.13
15	19 59 32.73	21.410	15 59 38.1	50.41	15	21 38 25.54	19.833	10 43 42.8	78.55
16	20 1 41.09	21.376	15 54 33.4	51.16	16	21 40 24.45	19.803	10 35 50.2	78.97
17	20 3 49.24	21.342	15 49 24.2	51.91	17	21 42 23.18	19.775	10 27 55.2	79.38
18	20 5 57.19	21.308	15 44 10.5	52.64	18	21 44 21.75	19.748	10 19 57.7	79.78
19	20 8 4.93	21.273	15 38 52.5	53.37	19	21 46 20.15	19.720	10 11 57.8	80.18
20	20 10 12.47	21.239	15 33 30.1	54.09	20	21 48 18.39	19.692	10 3 55.5	80.58
21	20 12 19.80	21.205	15 28 3.4	54.81	21	21 50 16.46	19.664	9 55 50.9	80.96
22	20 14 26.93	21.171	15 22 32.4	55.52	22	21 52 14.36	19.638	9 47 44.0	81.34
23	20 16 33.85	21.136	S. 15 16 57.2	56.22	23	21 54 12.11	19.612	S. 9 39 34.8	81.71
<b>MONDAY 10.</b>					<b>WEDNESDAY 12.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	20 18 40.56	21.102	S. 15 11 17.8	56.91	0	21 56 9.70	19.585	S. 9 31 23.5	82.08
1	20 20 47.07	21.068	15 5 34.3	57.59	1	21 58 7.13	19.558	9 23 9.9	82.43
2	20 22 53.37	21.033	14 59 46.7	58.28	2	22 0 4.40	19.533	9 14 54.3	82.78
3	20 24 59.47	20.998	14 53 55.0	58.95	3	22 2 1.53	19.508	9 6 36.5	83.13
4	20 27 5.35	20.964	14 47 59.3	59.62	4	22 3 58.50	19.483	8 58 16.7	83.48
5	20 29 11.04	20.930	14 41 59.6	60.28	5	22 5 55.32	19.458	8 49 54.8	83.81
6	20 31 16.51	20.895	14 35 56.0	60.93	6	22 7 52.00	19.434	8 41 31.0	84.13
7	20 33 21.78	20.862	14 29 48.5	61.58	7	22 9 48.53	19.410	8 33 5.2	84.46
8	20 35 26.85	20.827	14 23 37.1	62.22	8	22 11 44.92	19.387	8 24 37.5	84.78
9	20 37 31.70	20.793	14 17 21.9	62.84	9	22 13 41.17	19.363	8 16 7.9	85.08
10	20 39 36.36	20.759	14 11 3.0	63.47	10	22 15 37.28	19.341	8 7 36.5	85.38
11	20 41 40.81	20.724	14 4 40.3	64.08	11	22 17 33.26	19.318	7 59 3.3	85.68
12	20 43 45.05	20.690	13 58 14.0	64.70	12	22 19 29.10	19.295	7 50 28.4	85.97
13	20 45 49.09	20.657	13 51 43.9	65.31	13	22 21 24.80	19.273	7 41 51.7	86.26
14	20 47 52.93	20.623	13 45 10.3	65.89	14	22 23 20.38	19.253	7 33 13.3	86.53
15	20 49 56.57	20.589	13 38 33.2	66.48	15	22 25 15.83	19.232	7 24 33.3	86.81
16	20 52 0.00	20.556	13 31 52.5	67.07	16	22 27 11.16	19.211	7 15 51.6	87.08
17	20 54 3.24	20.522	13 25 8.3	67.65	17	22 29 6.36	19.191	7 7 8.4	87.33
18	20 56 6.27	20.488	13 18 20.7	68.22	18	22 31 1.45	19.171	6 58 23.6	87.58
19	20 58 9.10	20.456	13 11 29.7	68.78	19	22 32 56.41	19.151	6 49 37.4	87.83
20	21 0 11.74	20.423	13 4 35.4	69.33	20	22 34 51.26	19.133	6 40 49.6	88.08
21	21 2 14.18	20.390	12 57 37.8	69.88	21	22 36 46.00	19.113	6 32 0.4	88.32
22	21 4 16.42	20.358	12 50 36.9	70.42	22	22 38 40.62	19.095	6 23 9.8	88.55
23	21 6 18.47	20.325	12 43 32.8	70.95	23	22 40 35.14	19.078	6 14 17.8	88.78
24	21 8 20.32	20.292	S. 12 36 25.5	71.48	24	22 42 29.55	19.060	S. 6 5 24.5	88.99

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 13.</b>					<b>SATURDAY 15.</b>				
	h m s	s				h m s	s		
0	22 42 29.55	19.060	S. 6 5 24.5	88.99	0	0 12 48.38	18.749	N. 1 16 33.7	93.13
1	22 44 23.86	19.043	5 56 29.9	89.20	1	0 14 40.89	18.754	1 25 52.3	93.08
2	22 46 18.07	19.027	5 47 34.1	89.41	2	0 16 33.43	18.759	1 35 10.6	93.03
3	22 48 12.18	19.010	5 38 37.0	89.62	3	0 18 26.00	18.766	1 44 28.7	92.98
4	22 50 6.19	18.994	5 29 38.7	89.82	4	0 20 18.62	18.773	1 53 46.4	92.92
5	22 52 0.11	18.979	5 20 39.2	90.01	5	0 22 11.27	18.779	2 3 3.7	92.86
6	22 53 53.94	18.964	5 11 38.6	90.19	6	0 24 3.97	18.788	2 12 20.7	92.79
7	22 55 47.68	18.950	5 2 36.9	90.37	7	0 25 56.72	18.795	2 21 37.2	92.72
8	22 57 41.34	18.936	4 53 34.2	90.54	8	0 27 49.51	18.803	2 30 53.3	92.64
9	22 59 34.91	18.922	4 44 30.4	90.71	9	0 29 42.36	18.813	2 40 8.9	92.56
10	23 1 28.40	18.909	4 35 25.7	90.88	10	0 31 35.27	18.823	2 49 24.0	92.47
11	23 3 21.82	18.896	4 26 19.9	91.03	11	0 33 28.23	18.833	2 58 38.5	92.38
12	23 5 15.15	18.883	4 17 13.3	91.18	12	0 35 21.26	18.843	3 7 52.5	92.28
13	23 7 8.42	18.872	4 8 5.7	91.33	13	0 37 14.35	18.854	3 17 5.8	92.17
14	23 9 1.61	18.860	3 58 57.3	91.47	14	0 39 7.51	18.866	3 26 18.5	92.06
15	23 10 54.74	18.849	3 49 48.1	91.60	15	0 41 0.74	18.878	3 35 30.5	91.94
16	23 12 47.80	18.838	3 40 38.1	91.73	16	0 42 54.05	18.891	3 44 41.8	91.83
17	23 14 40.80	18.829	3 31 27.3	91.87	17	0 44 47.43	18.903	3 53 52.4	91.71
18	23 16 33.75	18.819	3 22 15.7	91.98	18	0 46 40.89	18.918	4 3 2.3	91.58
19	23 18 26.63	18.809	3 13 3.5	92.09	19	0 48 34.44	18.932	4 12 11.3	91.43
20	23 20 19.46	18.801	3 3 50.6	92.20	20	0 50 28.07	18.946	4 21 19.5	91.29
21	23 22 12.24	18.793	2 54 37.1	92.31	21	0 52 21.79	18.961	4 30 26.8	91.14
22	23 24 4.98	18.786	2 45 22.9	92.41	22	0 54 15.60	18.976	4 39 33.2	90.99
23	23 25 57.67	18.778	S. 2 36 8.2	92.49	23	0 56 9.50	18.993	N. 4 48 38.7	90.83
<b>FRIDAY 14.</b>					<b>SUNDAY 16.</b>				
0	23 27 50.31	18.770	S. 2 26 53.0	92.58	0	0 58 3.51	19.009	N. 4 57 43.2	90.67
1	23 29 42.91	18.764	2 17 37.2	92.67	1	0 59 57.61	19.026	5 6 46.7	90.50
2	23 31 35.48	18.759	2 8 21.0	92.74	2	1 1 51.82	19.043	5 15 49.2	90.33
3	23 33 28.02	18.753	1 59 4.3	92.82	3	1 3 46.13	19.061	5 24 50.7	90.15
4	23 35 20.52	18.748	1 49 47.2	92.88	4	1 5 40.55	19.080	5 33 51.0	89.96
5	23 37 12.99	18.743	1 40 29.7	92.94	5	1 7 35.09	19.099	5 42 50.2	89.78
6	23 39 5.44	18.739	1 31 11.9	92.99	6	1 9 29.74	19.118	5 51 48.3	89.58
7	23 40 57.86	18.736	1 21 53.8	93.05	7	1 11 24.51	19.138	6 0 45.1	89.38
8	23 42 50.27	18.733	1 12 35.3	93.10	8	1 13 19.40	19.158	6 9 40.8	89.17
9	23 44 42.66	18.730	1 3 16.6	93.13	9	1 15 14.41	19.179	6 18 35.1	88.95
10	23 46 35.03	18.728	0 53 57.7	93.17	10	1 17 9.55	19.201	6 27 28.2	88.74
11	23 48 27.39	18.727	0 44 38.6	93.20	11	1 19 4.82	19.223	6 36 20.0	88.51
12	23 50 19.75	18.726	0 35 19.3	93.23	12	1 21 0.23	19.246	6 45 10.3	88.28
13	23 52 12.10	18.724	0 25 59.9	93.24	13	1 22 55.77	19.268	6 53 59.3	88.05
14	23 54 4.44	18.723	0 16 40.4	93.26	14	1 24 51.45	19.292	7 2 46.9	87.80
15	23 55 56.78	18.724	S. 0 7 20.8	93.27	15	1 26 47.27	19.315	7 11 32.9	87.55
16	23 57 49.13	18.726	N. 0 1 58.8	93.28	16	1 28 43.23	19.339	7 20 17.5	87.31
17	23 59 41.49	18.727	0 11 18.5	93.28	17	1 30 39.34	19.364	7 29 0.6	87.04
18	0 1 33.85	18.728	0 20 38.1	93.27	18	1 32 35.60	19.390	7 37 42.0	86.78
19	0 3 26.23	18.731	0 29 57.7	93.26	19	1 34 32.02	19.416	7 46 21.9	86.51
20	0 5 18.62	18.733	0 39 17.2	93.23	20	1 36 28.59	19.442	7 55 0.1	86.23
21	0 7 11.02	18.736	0 48 36.5	93.22	21	1 38 25.32	19.468	8 3 36.6	85.94
22	0 9 3.45	18.740	0 57 55.8	93.19	22	1 40 22.21	19.495	8 12 11.4	85.65
23	0 10 55.90	18.744	1 7 14.8	93.16	23	1 42 19.26	19.523	8 20 44.4	85.36
24	0 12 48.38	18.749	N. 1 16 33.7	93.13	24	1 44 16.48	19.551	N. 8 29 15.7	85.06

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10m.	Declination.	Var. in 10m.	Hour.	Right Ascension.	Var. in 10m.	Declination.	Var. in 10m.
<b>MONDAY 17.</b>					<b>WEDNESDAY 19.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	1 44 16.48	19.551	8 29 15.7	85.06	0	3 22 7.74	21.358	14 30 5.6	62.53
1	1 46 13.87	19.579	8 37 45.1	84.75	1	3 24 16.02	21.403	14 36 18.8	61.88
2	1 48 11.43	19.608	8 46 12.7	84.43	2	3 26 24.58	21.448	14 42 28.1	61.22
3	1 50 9.16	19.638	8 54 38.3	84.11	3	3 28 33.40	21.493	14 48 33.4	60.55
4	1 52 7.08	19.668	9 3 2.0	83.79	4	3 30 42.50	21.539	14 54 34.7	59.87
5	1 54 5.17	19.698	9 11 23.8	83.46	5	3 32 51.87	21.585	15 0 31.8	59.18
6	1 56 3.45	19.728	9 19 43.5	83.11	6	3 35 1.52	21.631	15 6 24.9	58.49
7	1 58 1.91	19.759	9 28 1.1	82.77	7	3 37 11.44	21.676	15 12 13.7	57.78
8	2 0 0.56	19.791	9 36 16.7	82.42	8	3 39 21.63	21.722	15 17 58.3	57.08
9	2 1 59.40	19.823	9 44 30.1	82.05	9	3 41 32.10	21.768	15 23 38.6	56.36
10	2 3 58.43	19.855	9 52 41.3	81.69	10	3 43 42.85	21.815	15 29 14.6	55.63
11	2 5 57.66	19.888	10 0 50.4	81.32	11	3 45 53.88	21.861	15 34 46.2	54.89
12	2 7 57.09	19.922	10 8 57.2	80.93	12	3 48 5.18	21.908	15 40 13.3	54.15
13	2 9 56.72	19.955	10 17 1.6	80.55	13	3 50 16.77	21.954	15 45 36.0	53.40
14	2 11 56.55	19.989	10 25 3.8	80.17	14	3 52 28.63	22.000	15 50 54.1	52.64
15	2 13 56.59	20.024	10 33 3.6	79.77	15	3 54 40.77	22.047	15 56 7.7	51.87
16	2 15 56.84	20.059	10 41 1.0	79.36	16	3 56 53.19	22.093	16 1 16.6	51.09
17	2 17 57.30	20.094	10 48 55.9	78.94	17	3 59 5.89	22.140	16 6 20.8	50.31
18	2 19 57.97	20.129	10 56 48.3	78.53	18	4 1 18.87	22.187	16 11 20.3	49.52
19	2 21 58.85	20.166	11 4 38.2	78.10	19	4 3 32.13	22.233	16 16 15.0	48.71
20	2 23 59.96	20.203	11 12 25.5	77.67	20	4 5 45.67	22.280	16 21 4.8	47.90
21	2 26 1.28	20.239	11 20 10.2	77.23	21	4 7 59.49	22.327	16 25 49.8	47.08
22	2 28 2.83	20.277	11 27 52.2	76.78	22	4 10 13.59	22.373	16 30 29.8	46.26
23	2 30 4.60	20.314	N. 11 35 31.5	76.33	23	4 12 27.96	22.419	N. 16 35 4.9	45.43
<b>TUESDAY 18.</b>					<b>THURSDAY 20.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	2 32 6.60	20.352	N. 11 43 8.1	75.86	0	4 14 42.62	22.467	N. 16 39 34.9	44.58
1	2 34 8.82	20.390	11 50 41.8	75.39	1	4 16 57.56	22.513	16 43 59.8	43.73
2	2 36 11.28	20.429	11 58 12.8	74.92	2	4 19 12.77	22.558	16 48 19.6	42.87
3	2 38 13.97	20.468	12 5 40.8	74.43	3	4 21 28.25	22.604	16 52 34.2	42.00
4	2 40 16.90	20.508	12 13 6.0	73.95	4	4 23 44.02	22.651	16 56 43.6	41.13
5	2 42 20.06	20.548	12 20 28.2	73.44	5	4 26 0.06	22.696	17 0 47.7	40.24
6	2 44 23.47	20.588	12 27 47.3	72.93	6	4 28 16.37	22.742	17 4 46.5	39.35
7	2 46 27.11	20.628	12 35 3.4	72.43	7	4 30 32.96	22.788	17 8 39.9	38.44
8	2 48 31.00	20.669	12 42 16.4	71.91	8	4 32 49.82	22.833	17 12 27.8	37.53
9	2 50 35.14	20.710	12 49 26.3	71.38	9	4 35 6.95	22.878	17 16 10.3	36.62
10	2 52 39.52	20.751	12 56 33.0	70.84	10	4 37 24.35	22.923	17 19 47.3	35.69
11	2 54 44.15	20.793	13 3 36.4	70.30	11	4 39 42.02	22.968	17 23 18.6	34.76
12	2 56 49.03	20.834	13 10 36.6	69.75	12	4 41 59.96	23.012	17 26 44.4	33.83
13	2 58 54.16	20.877	13 17 33.4	69.19	13	4 44 18.16	23.056	17 30 4.5	32.88
14	3 0 59.55	20.919	13 24 26.9	68.63	14	4 46 36.63	23.101	17 33 18.9	31.92
15	3 3 5.19	20.962	13 31 16.9	68.05	15	4 48 55.37	23.144	17 36 27.5	30.96
16	3 5 11.09	21.005	13 38 3.5	67.47	16	4 51 14.36	23.188	17 39 30.4	29.99
17	3 7 17.25	21.048	13 44 46.5	66.88	17	4 53 33.62	23.231	17 42 27.4	29.00
18	3 9 23.67	21.093	13 51 26.0	66.28	18	4 55 53.13	23.273	17 45 18.4	28.02
19	3 11 30.36	21.136	13 58 1.9	65.68	19	4 58 12.90	23.316	17 48 3.6	27.03
20	3 13 37.30	21.179	14 4 34.1	65.07	20	5 0 32.92	23.358	17 50 42.8	26.03
21	3 15 44.51	21.224	14 11 2.7	64.45	21	5 2 53.20	23.400	17 53 15.9	25.02
22	3 17 51.99	21.268	14 17 27.5	63.81	22	5 5 13.72	23.442	17 55 43.0	24.00
23	3 19 59.73	21.313	14 23 48.4	63.18	23	5 7 34.50	23.483	17 58 3.9	22.98
24	3 22 7.74	21.358	N. 14 30 5.6	62.53	24	5 9 55.52	23.523	N. 18 0 18.7	21.95



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>FRIDAY 21.</b>					<b>SUNDAY 23.</b>				
	h m s	s	N. 18° 0' 18" 7	21° 95'		h m s	s	N. 17° 36' 50" 5	33° 04'
0	5 9 55.52	23.523	18 0 18.7	21.95	0	7 6 31.12	24.808	17 33 28.6	34.23
1	5 12 16.78	23.563	18 2 27.3	20.92	1	7 9 0.00	24.818	17 29 59.7	35.42
2	5 14 38.28	23.604	18 4 29.7	19.88	2	7 11 28.93	24.826	17 26 23.6	36.62
3	5 17 0.03	23.644	18 6 25.8	18.83	3	7 13 57.91	24.834	17 22 40.3	37.80
4	5 19 22.01	23.683	18 8 15.6	17.77	4	7 16 26.94	24.842	17 18 50.0	38.98
5	5 21 44.22	23.721	18 9 59.0	16.70	5	7 18 56.01	24.848	17 14 52.6	40.16
6	5 24 6.66	23.759	18 11 36.0	15.63	6	7 21 25.12	24.855	17 10 48.1	41.33
7	5 26 29.33	23.797	18 13 6.6	14.56	7	7 23 54.27	24.860	17 6 36.6	42.51
8	5 28 52.22	23.834	18 14 30.7	13.48	8	7 26 23.44	24.863	17 2 18.0	43.68
9	5 31 15.34	23.871	18 15 48.3	12.39	9	7 28 52.63	24.868	16 57 52.4	44.85
10	5 33 38.67	23.907	18 16 59.4	11.30	10	7 31 21.85	24.871	16 53 19.8	46.02
11	5 36 2.22	23.943	18 18 3.9	10.19	11	7 33 51.08	24.873	16 48 40.2	47.18
12	5 38 25.98	23.978	18 19 1.7	9.08	12	7 36 20.32	24.874	16 43 53.7	48.33
13	5 40 49.95	24.013	18 19 52.9	7.98	13	7 38 49.57	24.875	16 39 0.2	49.48
14	5 43 14.13	24.047	18 20 37.5	6.87	14	7 41 18.82	24.875	16 33 59.9	50.63
15	5 45 38.51	24.080	18 21 15.3	5.74	15	7 43 48.07	24.875	16 28 52.7	51.78
16	5 48 3.09	24.113	18 21 46.4	4.62	16	7 46 17.32	24.873	16 23 38.6	52.92
17	5 50 27.86	24.145	18 22 10.7	3.48	17	7 48 46.55	24.871	16 18 17.7	54.04
18	5 52 52.83	24.177	18 22 28.2	2.35	18	7 51 15.77	24.868	16 12 50.1	55.17
19	5 55 17.98	24.208	18 22 38.9	1.22	19	7 53 44.97	24.865	16 7 15.7	56.29
20	5 57 43.32	24.238	18 22 42.8	0.07	20	7 56 14.15	24.862	16 1 34.6	57.41
21	6 0 8.83	24.268	18 22 39.7	1.08	21	7 58 43.31	24.857	15 55 46.8	58.52
22	6 2 34.53	24.297	18 22 29.8	2.23	22	8 1 12.43	24.851	15 49 52.4	59.62
23	6 5 0.40	24.325	N. 18 22 12.9	3.40	23	8 3 41.52	24.846		
<b>SATURDAY 22.</b>					<b>MONDAY 24.</b>				
0	6 7 26.43	24.353	N. 18 21 49.0	4.56	0	8 6 10.58	24.839	N. 15 43 51.4	60.72
1	6 9 52.63	24.381	18 21 18.2	5.72	1	8 8 39.59	24.832	15 37 43.8	61.81
2	6 12 19.00	24.408	18 20 40.4	6.89	2	8 11 8.56	24.823	15 31 29.7	62.89
3	6 14 45.52	24.433	18 19 55.5	8.06	3	8 13 37.47	24.815	15 25 9.1	63.97
4	6 17 12.19	24.458	18 19 3.7	9.23	4	8 16 6.34	24.807	15 18 42.1	65.03
5	6 19 39.01	24.483	18 18 4.7	10.42	5	8 18 35.15	24.796	15 12 8.7	66.10
6	6 22 5.98	24.506	18 16 58.7	11.58	6	8 21 3.89	24.786	15 5 28.9	67.15
7	6 24 33.08	24.528	18 15 45.7	12.77	7	8 23 32.58	24.776	14 58 42.9	68.19
8	6 27 0.32	24.552	18 14 25.5	13.96	8	8 26 1.20	24.764	14 51 50.6	69.23
9	6 29 27.70	24.573	18 12 58.2	15.14	9	8 28 29.75	24.753	14 44 52.1	70.26
10	6 31 55.20	24.594	18 11 23.8	16.33	10	8 30 58.23	24.740	14 37 47.5	71.28
11	6 34 22.83	24.614	18 9 42.2	17.53	11	8 33 26.63	24.728	14 30 36.7	72.29
12	6 36 50.57	24.633	18 7 53.5	18.71	12	8 35 54.96	24.714	14 23 20.0	73.29
13	6 39 18.43	24.652	18 5 57.7	19.90	13	8 38 23.20	24.700	14 15 57.2	74.29
14	6 41 46.40	24.670	18 3 54.7	21.10	14	8 40 51.36	24.686	14 8 28.5	75.28
15	6 44 14.47	24.688	18 1 44.5	22.29	15	8 43 19.43	24.671	14 0 53.9	76.25
16	6 46 42.65	24.704	17 59 27.2	23.48	16	8 45 47.41	24.656	13 53 13.5	77.21
17	6 49 10.92	24.719	17 57 2.7	24.68	17	8 48 15.30	24.641	13 45 27.4	78.17
18	6 51 39.28	24.734	17 54 31.0	25.88	18	8 50 43.10	24.624	13 37 35.5	79.12
19	6 54 7.73	24.748	17 51 52.2	27.07	19	8 53 10.79	24.608	13 29 38.0	80.05
20	6 56 36.26	24.762	17 49 6.2	28.27	20	8 55 38.39	24.591	13 21 34.9	80.97
21	6 59 4.87	24.774	17 46 13.0	29.47	21	8 58 5.88	24.573	13 13 26.3	81.88
22	7 1 33.55	24.786	17 43 12.6	30.66	22	9 0 33.27	24.556	13 5 12.3	82.79
23	7 4 2.30	24.798	17 40 5.1	31.84	23	9 3 0.55	24.538	12 56 52.8	83.69
24	7 6 31.12	24.808	N. 17 36 50.5	33.04	24	9 5 27.72	24.519	N. 12 48 28.0	84.57

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>TUESDAY 25.</b>					<b>THURSDAY 27.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	9 5 27.72	24.519	N. 12 48 28.0	84.57	0	11 0 41.11	23.476	N. 4 44 0.6	112.26
1	9 7 54.78	24.501	12 39 57.9	85.44	1	11 3 1.90	23.456	4 32 46.3	112.51
2	9 10 21.73	24.482	12 31 22.7	86.30	2	11 5 22.58	23.436	4 21 30.5	112.75
3	9 12 48.56	24.463	12 22 42.3	87.15	3	11 7 43.13	23.415	4 10 13.3	112.97
4	9 15 15.28	24.443	12 13 56.9	87.99	4	11 10 3.56	23.396	3 58 54.9	113.18
5	9 17 41.87	24.423	12 5 6.4	88.82	5	11 12 23.88	23.377	3 47 35.2	113.38
6	9 20 8.35	24.403	11 56 11.0	89.63	6	11 14 44.08	23.357	3 36 14.4	113.56
7	9 22 34.70	24.382	11 47 10.8	90.43	7	11 17 4.16	23.337	3 24 52.5	113.73
8	9 25 0.93	24.362	11 38 5.8	91.22	8	11 19 24.12	23.318	3 13 29.7	113.88
9	9 27 27.04	24.341	11 28 56.1	92.00	9	11 21 43.98	23.300	3 2 6.0	114.02
10	9 29 53.02	24.319	11 19 41.8	92.77	10	11 24 3.72	23.282	2 50 41.5	114.15
11	9 32 18.87	24.298	11 10 22.9	93.53	11	11 26 23.36	23.264	2 39 16.2	114.27
12	9 34 44.59	24.277	11 0 59.5	94.28	12	11 28 42.89	23.246	2 27 50.3	114.36
13	9 37 10.19	24.255	10 51 31.6	95.01	13	11 31 2.31	23.228	2 16 23.9	114.45
14	9 39 35.65	24.233	10 41 59.4	95.72	14	11 33 21.62	23.210	2 4 56.9	114.52
15	9 42 0.98	24.211	10 32 23.0	96.42	15	11 35 40.83	23.194	1 53 29.6	114.58
16	9 44 26.18	24.189	10 22 42.4	97.12	16	11 37 59.95	23.178	1 42 1.9	114.64
17	9 46 51.25	24.167	10 12 57.6	97.80	17	11 40 18.96	23.160	1 30 33.9	114.68
18	9 49 16.18	24.143	10 3 8.8	98.46	18	11 42 37.87	23.144	1 19 5.8	114.69
19	9 51 40.97	24.121	9 53 16.1	99.11	19	11 44 56.69	23.128	1 7 37.6	114.70
20	9 54 5.63	24.099	9 43 19.5	99.76	20	11 47 15.41	23.113	0 56 9.4	114.70
21	9 56 30.16	24.077	9 33 19.0	100.39	21	11 49 34.04	23.098	0 44 41.2	114.69
22	9 58 54.55	24.053	9 23 14.8	101.00	22	11 51 52.58	23.083	0 33 13.1	114.66
23	10 1 18.80	24.031	N. 9 13 7.0	101.60	23	11 54 11.04	23.068	N. 0 21 45.3	114.62
<b>WEDNESDAY 26.</b>					<b>FRIDAY 28.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	10 3 42.92	24.008	N. 9 2 55.6	102.19	0	11 56 29.40	23.053	N. 0 10 17.7	114.57
1	10 6 6.90	23.985	8 52 40.7	102.77	1	11 58 47.68	23.040	S. 0 1 9.5	114.49
2	10 8 30.74	23.963	8 42 22.4	103.33	2	12 1 5.88	23.026	0 12 36.2	114.42
3	10 10 54.45	23.939	8 32 0.8	103.88	3	12 3 23.99	23.013	0 24 2.5	114.33
4	10 13 18.01	23.916	8 21 35.9	104.42	4	12 5 42.93	23.000	0 35 28.1	114.22
5	10 15 41.44	23.894	8 11 7.8	104.93	5	12 7 59.99	22.987	0 46 53.1	114.11
6	10 18 4.74	23.871	8 0 36.7	105.44	6	12 10 17.87	22.974	0 58 17.4	113.98
7	10 20 27.89	23.848	7 50 2.5	105.94	7	12 12 35.68	22.963	1 9 40.9	113.84
8	10 22 50.91	23.826	7 39 25.4	106.42	8	12 14 53.42	22.950	1 21 3.5	113.68
9	10 25 13.80	23.803	7 28 45.5	106.88	9	12 17 11.08	22.938	1 32 25.1	113.52
10	10 27 36.55	23.780	7 18 2.8	107.34	10	12 19 28.68	22.928	1 43 45.7	113.34
11	10 29 59.16	23.758	7 7 17.4	107.78	11	12 21 46.21	22.917	1 55 5.2	113.16
12	10 32 21.64	23.735	6 56 29.4	108.21	12	12 24 3.68	22.907	2 6 23.6	112.96
13	10 34 43.98	23.713	6 45 38.9	108.62	13	12 26 21.09	22.896	2 17 40.7	112.74
14	10 37 6.19	23.691	6 34 46.0	109.02	14	12 28 38.43	22.886	2 28 56.5	112.52
15	10 39 28.27	23.668	6 23 50.7	109.41	15	12 30 55.72	22.877	2 40 10.9	112.28
16	10 41 50.21	23.646	6 12 53.1	109.78	16	12 33 12.95	22.868	2 51 23.9	112.03
17	10 44 12.02	23.625	6 1 53.4	110.13	17	12 35 30.13	22.859	3 2 35.3	111.78
18	10 46 33.71	23.603	5 50 51.5	110.48	18	12 37 47.26	22.850	3 13 45.2	111.51
19	10 48 55.26	23.582	5 39 47.6	110.81	19	12 40 4.33	22.842	3 24 53.4	111.23
20	10 51 16.68	23.560	5 28 41.8	111.13	20	12 42 21.36	22.834	3 35 59.9	110.93
21	10 53 37.98	23.539	5 17 34.1	111.43	21	12 44 38.34	22.826	3 47 4.6	110.63
22	10 55 59.15	23.518	5 6 24.6	111.72	22	12 46 55.27	22.819	3 58 7.5	110.32
23	10 58 20.19	23.497	4 55 13.4	112.00	23	12 49 12.17	22.813	4 9 8.4	109.98
24	11 0 41.11	23.476	N. 4 44 0.6	112.26	24	12 51 29.02	22.805	S. 4 20 7.3	109.65

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SATURDAY 29.</b>					<b>MONDAY 31.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 51 29.02	22.805	S. 4 20 7.3	109.65	0	14 40 41.85	22.783	S. 12 8 45.0	82.18
1	12 53 45.83	22.798	4 31 4.2	109.31	1	14 42 58.55	22.786	12 16 55.8	81.41
2	12 56 2.60	22.793	4 41 59.0	108.95	2	14 45 15.28	22.790	12 25 1.9	80.63
3	12 58 19.34	22.788	4 52 51.6	108.58	3	14 47 32.03	22.793	12 33 3.3	79.84
4	13 0 36.05	22.782	5 3 41.9	108.19	4	14 49 48.80	22.797	12 41 0.0	79.04
5	13 2 52.72	22.777	5 14 29.9	107.81	5	14 52 5.59	22.801	12 48 51.8	78.24
6	13 5 9.37	22.773	5 25 15.6	107.41	6	14 54 22.41	22.805	12 56 38.9	77.44
7	13 7 25.99	22.768	5 35 58.8	106.99	7	14 56 39.25	22.808	13 4 21.1	76.63
8	13 9 42.58	22.763	5 46 39.5	106.57	8	14 58 56.11	22.812	13 11 58.4	75.81
9	13 11 59.14	22.759	5 57 17.7	106.14	9	15 1 12.99	22.815	13 19 30.8	74.98
10	13 14 15.69	22.756	6 7 53.2	105.69	10	15 3 29.89	22.819	13 26 58.2	74.14
11	13 16 32.21	22.752	6 18 26.0	105.24	11	15 5 46.82	22.823	13 34 20.5	73.31
12	13 18 48.71	22.748	6 28 56.1	104.78	12	15 8 3.77	22.828	13 41 37.9	72.48
13	13 21 5.19	22.746	6 39 23.4	104.32	13	15 10 20.75	22.831	13 48 50.2	71.62
14	13 23 21.66	22.744	6 49 47.9	103.83	14	15 12 37.74	22.834	13 55 57.3	70.76
15	13 25 38.12	22.742	7 0 9.4	103.33	15	15 14 54.76	22.838	14 2 59.3	69.91
16	13 27 54.56	22.739	7 10 27.9	102.83	16	15 17 11.80	22.842	14 9 56.2	69.04
17	13 30 10.99	22.738	7 20 43.3	102.33	17	15 19 28.86	22.845	14 16 47.8	68.17
18	13 32 27.41	22.736	7 30 55.8	101.81	18	15 21 45.94	22.848	14 23 34.2	67.29
19	13 34 43.82	22.735	7 41 5.1	101.28	19	15 24 3.04	22.852	14 30 15.3	66.40
20	13 37 0.23	22.734	7 51 11.1	100.73	20	15 26 20.16	22.855	14 36 51.0	65.52
21	13 39 16.63	22.733	8 1 13.9	100.18	21	15 28 37.30	22.858	14 43 21.5	64.63
22	13 41 33.02	22.733	8 11 13.3	99.63	22	15 30 54.46	22.862	14 49 46.6	63.73
23	13 43 49.42	22.733	S. 8 21 9.4	99.07	23	15 33 11.64	22.864	S. 14 56 6.3	62.83
<b>SUNDAY 30.</b>					<b>TUESDAY, AUG. 1.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	13 46 5.81	22.732	S. 8 31 2.1	98.49	0	15 35 28.83	22.867	S. 15 2 20.5	61.92
1	13 48 22.20	22.733	8 40 51.3	97.90					
2	13 50 38.60	22.733	8 50 36.9	97.31					
3	13 52 54.99	22.733	9 0 19.0	96.71					
4	13 55 11.39	22.734	9 9 57.4	96.09					
5	13 57 27.80	22.735	9 19 32.1	95.48					
6	13 59 44.21	22.736	9 29 3.1	94.85					
7	14 2 0.63	22.738	9 38 30.3	94.21					
8	14 4 17.06	22.739	9 47 53.6	93.56					
9	14 6 33.50	22.741	9 57 13.0	92.91					
10	14 8 49.95	22.743	10 6 28.5	92.25					
11	14 11 6.41	22.744	10 15 40.0	91.58					
12	14 13 22.88	22.747	10 24 47.5	90.91					
13	14 15 39.37	22.749	10 33 50.9	90.22					
14	14 17 55.87	22.752	10 42 50.1	89.53					
15	14 20 12.39	22.754	10 51 45.2	88.83					
16	14 22 28.92	22.757	11 0 36.0	88.12					
17	14 24 45.47	22.760	11 9 22.6	87.40					
18	14 27 2.04	22.763	11 18 4.8	86.68					
19	14 29 18.63	22.766	11 26 42.7	85.94					
20	14 31 35.23	22.768	11 35 16.1	85.20					
21	14 33 51.85	22.772	11 43 45.1	84.46					
22	14 36 8.50	22.776	11 52 9.6	83.71					
23	14 38 25.16	22.779	12 0 29.6	82.95					
24	14 40 41.85	22.783	S. 12 8 45.0	82.18					

## PHASES OF THE MOON.

		h m
July 1	☾ First Quarter	- 10 51.9
8	☉ Full Moon	- 15 7.3
16	☾ Last Quarter	- 17 11.0
24	● New Moon	- 0 47.1
30	☾ First Quarter	- 16 21.6

		h
July 14	☾ Apogee	- 5.4
26	☾ Perigee	- 3.5

## AT APPARENT NOON.

Date.	THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be added to Apparent Time.	Var. in hour.
	Apparent Right Ascension.	Var. in hour.	Apparent Declination.	Var. in hour.			
	h m s	s	N. 18 9 36.5	37.35	m s	m s	s
Tues.	1 8 43 26.76	9.722			1 6.63	6 11.17	0.134
Wed.	2 8 47 19.76	9.696	17 54 31.1	38.09	1 6.55	6 7.63	0.160
Thur.	3 8 51 12.15	9.670	17 39 8.3	38.81	1 6.46	6 3.47	0.186
Frid.	4 8 55 3.91	9.644	17 23 28.3	39.52	1 6.37	5 58.69	0.212
Sat.	5 8 58 55.06	9.619	17 7 31.4	40.22	1 6.28	5 53.30	0.237
Sun.	6 9 2 45.60	9.593	16 51 17.9	40.90	1 6.20	5 47.30	0.262
Mon.	7 9 6 35.54	9.568	16 34 48.0	41.58	1 6.11	5 40.71	0.287
Tues.	8 9 10 24.88	9.544	16 18 2.1	42.24	1 6.03	5 33.52	0.312
Wed.	9 9 14 13.64	9.520	16 1 0.4	42.89	1 5.94	5 25.74	0.336
Thur.	10 9 18 1.82	9.496	15 43 43.3	43.53	1 5.86	5 17.39	0.360
Frid.	11 9 21 49.44	9.472	15 26 11.0	44.16	1 5.78	5 8.48	0.383
Sat.	12 9 25 36.50	9.449	15 8 23.8	44.77	1 5.69	4 59.01	0.406
Sun.	13 9 29 23.00	9.426	14 50 22.0	45.37	1 5.61	4 48.99	0.429
Mon.	14 9 33 8.97	9.404	14 32 6.0	45.96	1 5.53	4 38.43	0.451
Tues.	15 9 36 54.41	9.382	14 13 36.1	46.53	1 5.45	4 27.35	0.473
Wed.	16 9 40 39.33	9.361	13 54 52.5	47.10	1 5.38	4 15.75	0.494
Thur.	17 9 44 23.74	9.340	13 35 55.5	47.65	1 5.30	4 3.64	0.515
Frid.	18 9 48 7.66	9.320	13 16 45.5	48.18	1 5.22	3 51.04	0.535
Sat.	19 9 51 51.09	9.299	12 57 22.9	48.70	1 5.15	3 37.95	0.555
Sun.	20 9 55 34.03	9.280	12 37 47.8	49.21	1 5.08	3 24.38	0.575
Mon.	21 9 59 16.51	9.260	12 18 0.8	49.70	1 5.01	3 10.34	0.595
Tues.	22 10 2 58.52	9.241	11 58 2.0	50.19	1 4.94	2 55.83	0.614
Wed.	23 10 6 40.08	9.222	11 37 51.8	50.65	1 4.87	2 40.88	0.632
Thur.	24 10 10 21.19	9.204	11 17 30.6	51.11	1 4.81	2 25.48	0.651
Frid.	25 10 14 1.86	9.186	10 56 58.7	51.55	1 4.75	2 9.64	0.669
Sat.	26 10 17 42.10	9.168	10 36 16.4	51.97	1 4.69	1 53.37	0.686
Sun.	27 10 21 21.92	9.151	10 15 24.2	52.38	1 4.63	1 36.69	0.704
Mon.	28 10 25 1.34	9.134	9 54 22.2	52.78	1 4.57	1 19.60	0.720
Tues.	29 10 28 40.36	9.118	9 33 10.9	53.16	1 4.52	1 2.12	0.736
Wed.	30 10 32 19.01	9.103	9 11 50.5	53.53	1 4.47	0 44.27	0.751
Thur.	31 10 35 57.31	9.089	8 50 21.4	53.89	1 4.42	0 26.06	0.766
Frid.	32 10 39 35.26	9.075	N. 8 28 43.9	54.23	1 4.37	0 7.51	0.780

\* Mean time of the Semidiameter passing may be found by subtracting 0<sup>s</sup>.18 from the Sidereal Time.

## AT MEAN NOON.

		THE SUN'S			Equation of Time, to be added to Apparent Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*		
Date.						
		h m s	N. ° ' "	' "	m s	h m s
Tues.	1	8 43 25.75	N. 18 9 40.3	15 47.11	6 11.18	8 37 14.57
Wed.	2	8 47 18.77	17 54 35.0	15 47.24	6 7.65	8 41 11.12
Thur.	3	8 51 11.17	17 39 12.2	15 47.37	6 3.49	8 45 7.68
Frid.	4	8 55 2.95	17 23 32.3	15 47.51	5 58.71	8 49 4.23
Sat.	5	8 58 54.12	17 7 35.4	15 47.65	5 53.33	8 53 0.79
Sun.	6	9 2 44.67	16 51 21.9	15 47.79	5 47.33	8 56 57.34
Mon.	7	9 6 34.63	16 34 52.0	15 47.93	5 40.73	9 0 53.90
Tues.	8	9 10 24.00	16 18 6.0	15 48.08	5 33.54	9 4 50.45
Wed.	9	9 14 12.78	16 1 4.3	15 48.23	5 25.77	9 8 47.01
Thur.	10	9 18 0.99	15 43 47.1	15 48.38	5 17.42	9 12 43.56
Frid.	11	9 21 48.63	15 26 14.7	15 48.54	5 8.51	9 16 40.12
Sat.	12	9 25 35.71	15 8 27.5	15 48.70	4 59.04	9 20 36.67
Sun.	13	9 29 22.25	14 50 25.7	15 48.86	4 49.02	9 24 33.22
Mon.	14	9 33 8.25	14 32 9.6	15 49.02	4 38.47	9 28 29.78
Tues.	15	9 36 53.72	14 13 39.5	15 49.19	4 27.39	9 32 26.33
Wed.	16	9 40 38.67	13 54 55.8	15 49.36	4 15.78	9 36 22.88
Thur.	17	9 44 23.11	13 35 58.7	15 49.53	4 3.67	9 40 19.44
Frid.	18	9 48 7.06	13 16 48.6	15 49.71	3 51.07	9 44 15.99
Sat.	19	9 51 50.52	12 57 25.8	15 49.89	3 37.98	9 48 12.54
Sun.	20	9 55 33.51	12 37 50.6	15 50.08	3 24.41	9 52 9.10
Mon.	21	9 59 16.02	12 18 3.4	15 50.27	3 10.37	9 56 5.65
Tues.	22	10 2 58.07	11 58 4.4	15 50.46	2 55.86	10 0 2.20
Wed.	23	10 6 39.66	11 37 54.0	15 50.67	2 40.91	10 3 58.76
Thur.	24	10 10 20.81	11 17 32.6	15 50.87	2 25.50	10 7 55.31
Frid.	25	10 14 1.52	10 57 0.5	15 51.08	2 9.66	10 11 51.86
Sat.	26	10 17 41.81	10 36 18.1	15 51.29	1 53.39	10 15 48.42
Sun.	27	10 21 21.68	10 15 25.6	15 51.51	1 36.71	10 19 44.97
Mon.	28	10 25 1.14	9 54 23.4	15 51.73	1 19.61	10 23 41.52
Tues.	29	10 28 40.21	9 33 11.8	15 51.95	1 2.13	10 27 38.07
Wed.	30	10 32 18.90	9 11 51.2	15 52.18	0 44.28	10 31 34.63
Thur.	31	10 35 57.24	8 50 21.8	15 52.41	0 26.06	10 35 31.18
Frid.	32	10 39 35.24	N. 8 28 44.0	15 52.64	0 7.51	10 39 27.73

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
1	128° 25' 56".0	N. 0° 38'	0.0064046	<sup>h</sup> 15 <sup>m</sup> 20 <sup>s</sup> 14.26	15' 46".86	15' 41".86	57' 49".03	57' 30".74
2	129 23 20.7	0.45	.0063452	15 16 18.35	15 36.99	15 32.25	57 12.88	56 55.53
3	130 20 46.0	0.49	.0062842	15 12 22.44	15 27.68	15 23.27	56 38.78	56 22.65
4	131 18 12.0	0.50	0.0062219	15 8 26.53	15 19.04	15 15.01	56 7.16	55 52.35
5	132 15 38.8	0.49	.0061582	15 4 30.62	15 11.16	15 7.50	55 38.25	55 24.85
6	133 13 6.5	0.45	.0060933	15 0 34.71	15 4.05	15 0.81	55 12.18	55 0.33
7	134 10 35.2	0.37	0.0060271	14 56 38.80	14 57.80	14 55.04	54 49.32	54 39.21
8	135 8 4.9	0.27	.0059597	14 52 42.90	14 52.57	14 50.40	54 30.15	54 22.18
9	136 5 35.8	0.17	.0058912	14 48 46.99	14 48.56	14 47.09	54 15.45	54 10.09
10	137 3 7.8	N. 0.06	0.0058214	14 44 51.08	14 46.04	14 45.43	54 6.23	54 4.00
11	138 0 41.1	S. 0.06	.0057504	14 40 55.17	14 45.30	14 45.70	54 3.53	54 4.97
12	138 58 15.8	0.18	.0056781	14 36 59.26	14 46.65	14 48.19	54 8.46	54 14.09
13	139 55 51.9	0.30	0.0056044	14 33 3.36	14 50.34	14 53.13	54 21.97	54 32.19
14	140 53 29.4	0.41	.0055294	14 29 7.45	14 56.56	15 0.65	54 44.77	54 59.73
15	141 51 8.4	0.49	.0054529	14 25 11.54	15 5.37	15 10.73	55 17.05	55 36.66
16	142 48 49.0	0.56	0.0053749	14 21 15.63	15 16.66	15 23.14	55 58.42	56 22.15
17	143 46 31.1	0.61	.0052952	14 17 19.73	15 30.08	15 37.41	56 47.60	57 14.44
18	144 44 14.9	0.63	.0052138	14 13 23.82	15 45.00	15 52.71	57 42.24	58 10.52
19	145 42 0.2	0.61	0.0051306	14 9 27.91	16 0.42	16 7.94	58 38.74	59 6.29
20	146 39 47.2	0.55	.0050454	14 5 32.00	16 15.08	16 21.66	59 32.47	59 56.61
21	147 37 35.7	0.47	.0049581	14 1 36.10	16 27.52	16 32.46	60 18.05	60 36.14
22	148 35 25.7	0.37	0.0048688	13 57 40.19	16 36.34	16 39.05	60 50.38	61 0.30
23	149 33 17.2	0.25	.0047774	13 53 44.28	16 40.51	16 40.69	61 5.65	61 6.30
24	150 31 10.2	S. 0.12	.0046838	13 49 48.38	16 39.61	16 37.33	61 2.35	60 54.01
25	151 29 4.5	N. 0.03	0.0045883	13 45 52.47	16 33.96	16 29.63	60 41.66	60 25.78
26	152 27 0.2	0.17	.0044908	13 41 56.56	16 24.49	16 18.72	60 6.96	59 45.80
27	153 24 57.1	0.30	.0043916	13 38 0.65	16 12.48	16 5.92	59 22.92	58 58.90
28	154 22 55.2	0.41	0.0042908	13 34 4.75	15 59.21	15 52.47	58 34.32	58 9.65
29	155 20 54.7	0.49	.0041885	13 30 8.84	15 45.84	15 39.38	57 45.32	57 21.65
30	156 18 55.4	0.55	.0040850	13 26 12.93	15 33.18	15 27.29	56 58.92	56 37.37
31	157 16 57.5	0.57	0.0039805	13 22 17.03	15 21.76	15 16.61	56 17.11	55 58.24
32	158 15 1.0	N. 0.56	0.0038749	13 18 21.12	15 11.86	15 7.51	55 40.82	55 24.88

## MEAN TIME.

Day.	THE MOON'S						
	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	235° 11' 8.7	241° 54' 11.7	N. 4° 8' 49.0	N. 4° 28' 14.1	7.97	7 13.6	19 40.0
2	248 33 37.2	255 9 32.0	4 43 49.5	4 55 29.2	8.97	8 6.4	20 32.8
3	261 42 2.5	268 11 14.5	5 3 10.0	5 6 52.2	9.97	8 59.0	21 24.9
4	274 37 13.0	281 0 2.1	5 6 38.8	5 2 35.4	10.97	9 50.6	22 16.0
5	287 19 46.3	293 36 29.2	4 54 50.3	4 43 34.0	11.97	10 40.9	23 5.4
6	299 50 15.1	306 1 9.2	4 28 58.8	4 11 19.2	12.97	11 29.4	23 52.9
7	312 9 17.2	318 14 46.9	3 50 51.0	3 27 51.1	13.97	12 16.0	* *
8	324 17 47.5	330 18 30.3	3 2 37.4	2 35 28.5	14.97	13 0.8	0 38.6
9	336 17 9.3	342 14 1.0	2 6 43.5	1 36 41.4	15.97	13 44.3	1 22.7
10	348 9 23.9	354 3 40.0	1 5 41.2	N. 0 34 2.0	16.97	14 26.8	2 5.6
11	359 57 13.4	5 50 31.2	N. 0 2 2.6	S. 0 29 58.9	17.97	15 9.0	2 47.9
12	11 44 2.5	17 38 19.4	S. 1 1 44.1	1 32 55.0	18.97	15 51.5	3 30.2
13	23 33 55.0	29 31 25.1	2 3 13.9	2 32 22.9	19.97	16 35.1	4 13.2
14	35 31 26.1	41 34 35.5	3 0 4.2	3 25 59.6	20.97	17 20.4	4 57.5
15	47 41 30.8	53 52 49.2	3 49 50.5	4 11 18.2	21.97	18 7.9	5 43.8
16	60 9 5.9	66 30 54.5	4 30 3.3	4 45 46.4	22.97	18 58.0	6 32.6
17	72 58 44.5	79 33 1.0	4 58 7.9	5 6 48.5	23.97	19 50.9	7 24.1
18	86 14 2.8	93 2 1.2	5 11 30.1	5 11 56.1	24.97	20 46.2	8 18.3
19	99 56 59.3	106 58 49.4	5 7 52.5	4 59 9.1	25.97	21 43.2	9 14.5
20	114 7 14.2	121 21 44.7	4 45 40.6	4 27 27.8	26.97	22 40.9	10 12.0
21	128 41 41.6	136 6 15.2	4 4 38.5	3 37 28.3	27.97	23 38.6	11 9.8
22	143 34 27.9	151 5 15.5	3 6 20.8	2 31 47.5	28.97	* *	12 7.1
23	158 37 29.9	166 10 1.8	1 54 26.6	S. 1 15 1.9	0.64	0 35.5	13 3.6
24	173 41 43.7	181 11 32.1	S. 0 34 20.8	N. 0 6 48.0	1.64	1 31.4	13 59.1
25	188 38 29.6	196 1 46.7	N. 0 47 35.8	1 27 16.8	2.64	2 26.5	14 53.8
26	203 20 42.7	210 34 46.2	2 5 8.8	2 40 35.2	3.64	3 21.0	15 48.1
27	217 43 34.6	224 46 54.3	3 13 4.7	3 42 12.2	4.64	4 15.2	16 42.2
28	231 44 39.1	238 36 49.5	4 7 38.2	4 29 8.9	5.64	5 9.2	17 36.0
29	245 23 31.4	252 4 55.2	4 46 35.3	4 59 53.0	6.64	6 2.8	18 29.3
30	258 41 14.8	265 12 46.1	5 9 0.8	5 14 0.9	7.64	6 55.7	19 21.8
31	271 39 46.8	278 2 35.3	5 14 58.6	5 12 0.8	8.64	7 47.6	20 13.0
32	284 21 30.2	290 36 50.5	N. 5 5 16.9	N. 4 54 57.6	9.64	8 37.9	21 2.5

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
TUESDAY 1.					THURSDAY 3.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	15 35 28.83	22.867	S. 15 2 20.5	61.92	0	17 25 11.37	22.739	S. 18 8 36.7	14.88
1	15 37 46.04	22.870	15 8 29.3	61.02	1	17 27 27.77	22.728	18 10 3.0	13.87
2	15 40 3.27	22.873	15 14 32.7	60.10	2	17 29 44.11	22.718	18 11 23.1	12.85
3	15 42 20.51	22.875	15 20 30.5	59.18	3	17 32 0.39	22.708	18 12 37.2	11.85
4	15 44 37.77	22.878	15 26 22.8	58.25	4	17 34 16.60	22.695	18 13 45.3	10.85
5	15 46 55.04	22.879	15 32 9.5	57.32	5	17 36 32.73	22.683	18 14 47.4	9.84
6	15 49 12.32	22.882	15 37 50.6	56.38	6	17 38 48.80	22.672	18 15 43.4	8.83
7	15 51 29.62	22.883	15 43 26.1	55.45	7	17 41 4.79	22.659	18 16 33.3	7.83
8	15 53 46.92	22.885	15 48 56.0	54.52	8	17 43 20.71	22.646	18 17 17.3	6.83
9	15 56 4.24	22.887	15 54 20.3	53.57	9	17 45 36.54	22.633	18 17 55.2	5.82
10	15 58 21.56	22.888	15 59 38.8	52.62	10	17 47 52.30	22.619	18 18 27.1	4.82
11	16 0 38.89	22.889	16 4 51.7	51.67	11	17 50 7.97	22.605	18 18 53.0	3.83
12	16 2 56.23	22.890	16 9 58.8	50.71	12	17 52 23.56	22.591	18 19 13.0	2.83
13	16 5 13.57	22.891	16 15 0.2	49.75	13	17 54 39.06	22.576	18 19 26.9	1.83
14	16 7 30.92	22.892	16 19 55.8	48.79	14	17 56 54.47	22.561	18 19 34.9	0.84
15	16 9 48.27	22.892	16 24 45.7	47.83	15	17 59 9.79	22.545	18 19 37.0	0.15
16	16 12 5.62	22.891	16 29 29.7	46.85	16	18 1 25.01	22.528	18 19 33.1	1.14
17	16 14 22.96	22.891	16 34 7.9	45.88	17	18 3 40.13	22.513	18 19 23.3	2.13
18	16 16 40.31	22.892	16 38 40.3	44.92	18	18 5 55.16	22.497	18 19 7.5	3.12
19	16 18 57.66	22.891	16 43 6.9	43.93	19	18 8 10.09	22.479	18 18 45.9	4.09
20	16 21 15.00	22.889	16 47 27.5	42.95	20	18 10 24.91	22.462	18 18 18.4	5.08
21	16 23 32.33	22.888	16 51 42.3	41.97	21	18 12 39.63	22.444	18 17 45.0	6.06
22	16 25 49.66	22.887	16 55 51.2	40.98	22	18 14 54.24	22.427	18 17 5.7	7.03
23	16 28 6.97	22.885	S. 16 59 54.1	40.00	23	18 17 8.75	22.408	S. 18 16 20.6	8.00
WEDNESDAY 2.					FRIDAY 4.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	16 30 24.28	22.883	S. 17 3 51.2	39.02	0	18 19 23.14	22.388	S. 18 15 29.7	8.97
1	16 32 41.57	22.881	17 7 42.3	38.02	1	18 21 37.41	22.368	18 14 33.0	9.93
2	16 34 58.85	22.878	17 11 27.4	37.02	2	18 23 51.57	22.350	18 13 30.5	10.89
3	16 37 16.11	22.875	17 15 6.5	36.03	3	18 26 5.61	22.331	18 12 22.3	11.85
4	16 39 33.35	22.872	17 18 39.7	35.03	4	18 28 19.54	22.311	18 11 8.3	12.82
5	16 41 50.57	22.868	17 22 6.9	34.03	5	18 30 33.34	22.289	18 9 48.5	13.77
6	16 44 7.77	22.864	17 25 28.1	33.03	6	18 32 47.01	22.268	18 8 23.1	14.71
7	16 46 24.94	22.860	17 28 43.3	32.03	7	18 35 0.56	22.248	18 6 52.0	15.66
8	16 48 42.09	22.857	17 31 52.5	31.03	8	18 37 13.99	22.227	18 5 15.2	16.61
9	16 50 59.22	22.852	17 34 55.6	30.02	9	18 39 27.28	22.204	18 3 32.7	17.54
10	16 53 16.31	22.846	17 37 52.7	29.02	10	18 41 40.44	22.183	18 1 44.7	18.48
11	16 55 33.37	22.841	17 40 43.8	28.02	11	18 43 53.47	22.161	17 59 51.0	19.41
12	16 57 50.40	22.835	17 43 28.9	27.01	12	18 46 6.37	22.138	17 57 51.8	20.33
13	17 0 7.39	22.828	17 46 7.9	25.99	13	18 48 19.13	22.115	17 55 47.0	21.26
14	17 2 24.34	22.823	17 48 40.8	24.98	14	18 50 31.75	22.092	17 53 36.7	22.18
15	17 4 41.26	22.816	17 51 7.7	23.98	15	18 52 44.23	22.068	17 51 20.9	23.09
16	17 6 58.13	22.808	17 53 28.5	22.97	16	18 54 56.56	22.043	17 48 59.6	24.00
17	17 9 14.96	22.802	17 55 43.3	21.96	17	18 57 8.75	22.020	17 46 32.9	24.91
18	17 11 31.75	22.793	17 57 52.0	20.94	18	18 59 20.80	21.996	17 44 0.7	25.81
19	17 13 48.48	22.785	17 59 54.6	19.93	19	19 1 32.70	21.971	17 41 23.2	26.71
20	17 16 5.17	22.777	18 1 51.1	18.92	20	19 3 44.45	21.946	17 38 40.2	27.60
21	17 18 21.80	22.768	18 3 41.6	17.92	21	19 5 56.05	21.921	17 35 52.0	28.48
22	17 20 38.38	22.758	18 5 26.1	16.90	22	19 8 7.50	21.895	17 32 58.4	29.37
23	17 22 54.90	22.749	18 7 4.4	15.88	23	19 10 18.79	21.869	17 29 59.5	30.25
24	17 25 11.37	22.739	S. 18 8 36.7	14.88	24	19 12 29.93	21.843	S. 17 26 55.4	31.12



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
SATURDAY 5.					MONDAY 7.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	19 12 29.93	21.843	S. 17 26 55.4	31.12	0	20 54 3.37	20.444	S. 13 27 32.4	66.28
1	19 14 40.91	21.818	17 23 46.1	31.98	1	20 56 5.95	20.414	13 20 53.0	66.86
2	19 16 51.74	21.792	17 20 31.6	32.85	2	20 58 8.34	20.384	13 14 10.1	67.43
3	19 19 2.41	21.764	17 17 11.9	33.72	3	21 0 10.56	20.355	13 7 23.8	68.00
4	19 21 12.91	21.738	17 13 47.0	34.57	4	21 2 12.60	20.326	13 0 34.1	68.56
5	19 23 23.26	21.711	17 10 17.1	35.41	5	21 4 14.47	20.298	12 53 41.1	69.11
6	19 25 33.44	21.683	17 6 42.1	36.26	6	21 6 16.17	20.268	12 46 44.8	69.65
7	19 27 43.45	21.655	17 3 2.0	37.09	7	21 8 17.69	20.238	12 39 45.3	70.18
8	19 29 53.30	21.628	16 59 17.0	37.92	8	21 10 19.03	20.209	12 32 42.6	70.72
9	19 32 2.98	21.600	16 55 27.0	38.75	9	21 12 20.20	20.182	12 25 36.7	71.24
10	19 34 12.50	21.572	16 51 32.0	39.57	10	21 14 21.21	20.153	12 18 27.7	71.76
11	19 36 21.85	21.543	16 47 32.1	40.38	11	21 16 22.04	20.124	12 11 15.6	72.28
12	19 38 31.02	21.515	16 43 27.4	41.19	12	21 18 22.70	20.096	12 4 0.4	72.78
13	19 40 40.03	21.487	16 39 17.8	42.00	13	21 20 23.19	20.068	11 56 42.3	73.27
14	19 42 48.87	21.458	16 35 3.4	42.80	14	21 22 23.52	20.041	11 49 21.2	73.77
15	19 44 57.53	21.429	16 30 44.2	43.59	15	21 24 23.68	20.013	11 41 57.1	74.25
16	19 47 6.02	21.401	16 26 20.3	44.38	16	21 26 23.67	19.985	11 34 30.2	74.73
17	19 49 14.34	21.372	16 21 51.7	45.16	17	21 28 23.50	19.958	11 27 0.4	75.20
18	19 51 22.48	21.342	16 17 18.4	45.93	18	21 30 23.16	19.930	11 19 27.8	75.66
19	19 53 30.44	21.313	16 12 40.5	46.70	19	21 32 22.66	19.904	11 11 52.5	76.12
20	19 55 38.23	21.283	16 7 58.0	47.47	20	21 34 22.01	19.878	11 4 14.4	76.58
21	19 57 45.84	21.254	16 3 10.9	48.23	21	21 36 21.19	19.850	10 56 33.6	77.02
22	19 59 53.28	21.225	15 58 19.3	48.97	22	21 38 20.21	19.823	10 48 50.2	77.45
23	20 2 0.54	21.195	S. 15 53 23.2	49.72	23	21 40 19.07	19.798	S. 10 41 4.2	77.88
SUNDAY 6.					TUESDAY 8.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	20 4 7.62	21.165	S. 15 48 22.7	50.46	0	21 42 17.78	19.772	S. 10 33 15.6	78.31
1	20 6 14.52	21.135	15 43 17.7	51.19	1	21 44 16.33	19.746	10 25 24.5	78.73
2	20 8 21.24	21.105	15 38 8.4	51.92	2	21 46 14.73	19.720	10 17 30.9	79.14
3	20 10 27.78	21.075	15 32 54.7	52.64	3	21 48 12.97	19.695	10 9 34.8	79.55
4	20 12 34.14	21.045	15 27 36.7	53.35	4	21 50 11.07	19.671	10 1 36.3	79.94
5	20 14 40.32	21.015	15 22 14.5	54.06	5	21 52 9.02	19.645	9 53 35.5	80.33
6	20 16 46.32	20.985	15 16 48.0	54.77	6	21 54 6.81	19.620	9 45 32.3	80.72
7	20 18 52.14	20.955	15 11 17.3	55.46	7	21 56 4.46	19.597	9 37 26.8	81.10
8	20 20 57.78	20.924	15 5 42.5	56.14	8	21 58 1.97	19.573	9 29 19.1	81.48
9	20 23 3.23	20.894	15 0 3.6	56.83	9	21 59 59.33	19.548	9 21 9.1	81.84
10	20 25 8.51	20.864	14 54 20.6	57.51	10	22 1 56.55	19.526	9 12 57.0	82.19
11	20 27 13.60	20.834	14 48 33.5	58.18	11	22 3 53.64	19.502	9 4 42.8	82.55
12	20 29 18.52	20.804	14 42 42.5	58.83	12	22 5 50.58	19.478	8 56 26.4	82.90
13	20 31 23.25	20.773	14 36 47.5	59.49	13	22 7 47.38	19.456	8 48 8.0	83.24
14	20 33 27.79	20.743	14 30 48.6	60.14	14	22 9 44.05	19.434	8 39 47.5	83.58
15	20 35 32.16	20.713	14 24 45.8	60.79	15	22 11 40.59	19.412	8 31 25.1	83.90
16	20 37 36.35	20.683	14 18 39.1	61.43	16	22 13 36.99	19.389	8 23 0.7	84.22
17	20 39 40.36	20.653	14 12 28.7	62.05	17	22 15 33.26	19.368	8 14 34.4	84.53
18	20 41 44.18	20.623	14 6 14.5	62.68	18	22 17 29.41	19.348	8 6 6.3	84.84
19	20 43 47.83	20.593	13 59 56.5	63.30	19	22 19 25.43	19.326	7 57 36.3	85.15
20	20 45 51.30	20.563	13 53 34.9	63.90	20	22 21 21.32	19.305	7 49 4.5	85.45
21	20 47 54.58	20.533	13 47 9.7	64.51	21	22 23 17.09	19.285	7 40 30.9	85.73
22	20 49 57.69	20.503	13 40 40.8	65.11	22	22 25 12.74	19.265	7 31 55.7	86.02
23	20 52 0.62	20.473	13 34 8.4	65.70	23	22 27 8.27	19.245	7 23 18.7	86.30
24	20 54 3.37	20.444	S. 13 27 32.4	66.28	24	22 29 3.68	19.226	S. 7 14 40.1	86.57

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 9.</b>					<b>FRIDAY 11.</b>				
	h m s	s	° ' " "	"		h m s	s	° ' " "	"
0	22 29 3.68	19.226	S. 7 14 40.1	86.57	0	23 59 46.56	18.718	N. 0 0 46.2	92.66
1	22 30 58.98	19.207	7 5 59.9	86.83	1	0 1 38.86	18.718	0 10 2.1	92.64
2	22 32 54.16	19.188	6 57 18.1	87.09	2	0 3 31.17	18.718	0 19 17.9	92.63
3	22 34 49.24	19.170	6 48 34.8	87.34	3	0 5 23.47	18.717	0 28 33.6	92.60
4	22 36 44.20	19.151	6 39 50.0	87.59	4	0 7 15.77	18.718	0 37 49.1	92.58
5	22 38 39.05	19.133	6 31 3.7	87.83	5	0 9 8.08	18.718	0 47 4.5	92.54
6	22 40 33.80	19.117	6 22 16.0	88.07	6	0 11 0.39	18.719	0 56 19.6	92.50
7	22 42 28.45	19.099	6 13 26.9	88.30	7	0 12 52.71	18.721	1 5 34.5	92.47
8	22 44 22.99	19.082	6 4 36.4	88.52	8	0 14 45.04	18.723	1 14 49.2	92.42
9	22 46 17.43	19.066	5 55 44.7	88.73	9	0 16 37.39	18.727	1 24 3.5	92.36
10	22 48 11.78	19.050	5 46 51.6	88.95	10	0 18 29.76	18.729	1 33 17.5	92.30
11	22 50 6.03	19.034	5 37 57.3	89.15	11	0 20 22.14	18.733	1 42 31.1	92.23
12	22 52 0.19	19.018	5 29 1.8	89.34	12	0 22 14.55	18.737	1 51 44.3	92.16
13	22 53 54.25	19.003	5 20 5.2	89.53	13	0 24 6.98	18.740	2 0 57.0	92.08
14	22 55 48.23	18.989	5 11 7.4	89.73	14	0 25 59.43	18.745	2 10 9.3	92.01
15	22 57 42.12	18.974	5 2 8.5	89.91	15	0 27 51.92	18.751	2 19 21.1	91.93
16	22 59 35.92	18.960	4 53 8.5	90.08	16	0 29 44.44	18.756	2 28 32.4	91.83
17	23 1 29.64	18.947	4 44 7.5	90.25	17	0 31 36.99	18.762	2 37 43.1	91.73
18	23 3 23.28	18.933	4 35 5.5	90.41	18	0 33 29.58	18.768	2 46 53.2	91.63
19	23 5 16.84	18.921	4 26 2.6	90.58	19	0 35 22.21	18.775	2 56 2.7	91.53
20	23 7 10.33	18.909	4 16 58.7	90.73	20	0 37 14.88	18.783	3 5 11.5	91.41
21	23 9 3.75	18.897	4 7 53.9	90.87	21	0 39 7.60	18.790	3 14 19.6	91.29
22	23 10 57.09	18.884	3 58 48.3	91.00	22	0 41 0.36	18.798	3 23 27.0	91.17
23	23 12 50.36	18.873	S. 3 49 41.9	91.13	23	0 42 53.18	18.808	N. 3 32 33.6	91.03
<b>THURSDAY 10.</b>					<b>SATURDAY 12.</b>				
0	23 14 43.57	18.863	S. 3 40 34.7	91.27	0	0 44 46.05	18.816	N. 3 41 39.4	90.90
1	23 16 36.71	18.852	3 31 26.7	91.39	1	0 46 38.97	18.826	3 50 44.4	90.77
2	23 18 29.79	18.842	3 22 18.0	91.51	2	0 48 31.96	18.836	3 59 48.6	90.63
3	23 20 22.81	18.832	3 13 8.6	91.62	3	0 50 25.00	18.846	4 8 51.9	90.48
4	23 22 15.77	18.822	3 3 58.6	91.72	4	0 52 18.11	18.858	4 17 54.3	90.32
5	23 24 8.67	18.813	2 54 48.0	91.82	5	0 54 11.29	18.868	4 26 55.7	90.15
6	23 26 1.53	18.805	2 45 36.8	91.92	6	0 56 4.53	18.880	4 35 56.1	89.98
7	23 27 54.33	18.796	2 36 25.0	92.01	7	0 57 57.85	18.893	4 44 55.5	89.81
8	23 29 47.08	18.788	2 27 12.7	92.08	8	0 59 51.24	18.904	4 53 53.8	89.63
9	23 31 39.79	18.782	2 18 0.0	92.16	9	1 1 44.70	18.918	5 2 51.1	89.46
10	23 33 32.46	18.774	2 8 46.8	92.24	10	1 3 38.25	18.932	5 11 47.3	89.27
11	23 35 25.08	18.768	1 59 33.1	92.31	11	1 5 31.88	18.945	5 20 42.3	89.07
12	23 37 17.67	18.762	1 50 19.1	92.36	12	1 7 25.59	18.959	5 29 36.2	88.88
13	23 39 10.22	18.755	1 41 4.8	92.41	13	1 9 19.39	18.974	5 38 28.8	88.67
14	23 41 2.73	18.749	1 31 50.2	92.46	14	1 11 13.28	18.989	5 47 20.2	88.46
15	23 42 55.21	18.744	1 22 35.3	92.51	15	1 13 7.26	19.004	5 56 10.3	88.24
16	23 44 47.66	18.740	1 13 20.1	92.55	16	1 15 1.33	19.021	6 4 59.1	88.02
17	23 46 40.09	18.737	1 4 4.7	92.58	17	1 16 55.51	19.038	6 13 46.5	87.79
18	23 48 32.50	18.732	0 54 49.1	92.61	18	1 18 49.78	19.054	6 22 32.6	87.57
19	23 50 24.88	18.728	0 45 33.4	92.63	19	1 20 44.16	19.072	6 31 17.3	87.33
20	23 52 17.24	18.726	0 36 17.6	92.64	20	1 22 38.64	19.089	6 40 0.5	87.08
21	23 54 9.59	18.723	0 27 1.7	92.66	21	1 24 33.23	19.108	6 48 42.3	86.83
22	23 56 1.92	18.721	0 17 45.7	92.66	22	1 26 27.94	19.127	6 57 22.5	86.58
23	23 57 54.24	18.720	S. 0 8 29.8	92.66	23	1 28 22.75	19.145	7 6 1.2	86.33
24	23 59 46.56	18.718	N. 0 0 46.2	92.66	24	1 30 17.68	19.165	N. 7 14 38.4	86.06

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 13.</b>					<b>TUESDAY 15.</b>				
	h m s	s	N. ° ' "	" "		h m s	s	N. ° ' "	" "
0	1 30 17.68	19.165	N. 7 14 38.4	86.06	0	3 5 19.19	20.574	N. 13 25 59.2	66.29
1	1 32 12.73	19.186	7 23 13.9	85.78	1	3 7 22.75	20.613	13 32 35.2	65.73
2	1 34 7.91	19.206	7 31 47.8	85.51	2	3 9 26.54	20.651	13 39 7.9	65.16
3	1 36 3.20	19.226	7 40 20.0	85.23	3	3 11 30.56	20.689	13 45 37.1	64.57
4	1 37 58.62	19.248	7 48 50.5	84.94	4	3 13 34.81	20.728	13 52 2.7	63.98
5	1 39 54.18	19.270	7 57 19.3	84.64	5	3 15 39.29	20.767	13 58 24.8	63.38
6	1 41 49.86	19.291	8 5 46.2	84.34	6	3 17 44.01	20.807	14 4 43.3	62.78
7	1 43 45.67	19.314	8 14 11.4	84.04	7	3 19 48.97	20.846	14 10 58.1	62.17
8	1 45 41.63	19.338	8 22 34.7	83.73	8	3 21 54.16	20.885	14 17 9.3	61.55
9	1 47 37.72	19.360	8 30 56.2	83.42	9	3 23 59.59	20.926	14 23 16.7	60.93
10	1 49 33.95	19.384	8 39 15.7	83.08	10	3 26 5.27	20.966	14 29 20.4	60.30
11	1 51 30.33	19.409	8 47 33.2	82.76	11	3 28 11.18	21.006	14 35 20.3	59.66
12	1 53 26.86	19.433	8 55 48.8	82.43	12	3 30 17.34	21.048	14 41 16.3	59.00
13	1 55 23.53	19.458	9 4 2.4	82.09	13	3 32 23.75	21.088	14 47 8.3	58.35
14	1 57 20.35	19.483	9 12 13.9	81.74	14	3 34 30.40	21.129	14 52 56.5	57.70
15	1 59 17.33	19.510	9 20 23.3	81.38	15	3 36 37.30	21.170	14 58 40.7	57.03
16	2 1 14.47	19.536	9 28 30.5	81.03	16	3 38 44.44	21.212	15 4 20.8	56.35
17	2 3 11.76	19.563	9 36 35.6	80.67	17	3 40 51.84	21.253	15 9 56.9	55.67
18	2 5 9.22	19.590	9 44 38.5	80.30	18	3 42 59.48	21.295	15 15 28.8	54.98
19	2 7 6.84	19.617	9 52 39.2	79.93	19	3 45 7.38	21.338	15 20 56.6	54.28
20	2 9 4.62	19.644	10 0 37.6	79.54	20	3 47 15.53	21.379	15 26 20.2	53.58
21	2 11 2.57	19.673	10 8 33.7	79.16	21	3 49 23.93	21.422	15 31 39.6	52.87
22	2 13 0.70	19.702	10 16 27.5	78.77	22	3 51 32.59	21.464	15 36 54.6	52.14
23	2 14 58.99	19.731	N. 10 24 18.9	78.36	23	3 53 41.50	21.507	N. 15 42 5.3	51.42
<b>MONDAY 14.</b>					<b>WEDNESDAY 16.</b>				
	h m s	s	N. ° ' "	" "		h m s	s	N. ° ' "	" "
0	2 16 57.47	19.761	N. 10 32 7.8	77.95	0	3 55 50.67	21.549	N. 15 47 11.7	50.69
1	2 18 56.12	19.790	10 39 54.3	77.54	1	3 58 0.09	21.593	15 52 13.6	49.95
2	2 20 54.95	19.820	10 47 38.3	77.13	2	4 0 9.78	21.636	15 57 11.1	49.20
3	2 22 53.96	19.851	10 55 19.8	76.71	3	4 2 19.72	21.678	16 2 4.0	48.44
4	2 24 53.16	19.883	11 2 58.8	76.28	4	4 4 29.92	21.721	16 6 52.4	47.68
5	2 26 52.55	19.913	11 10 35.1	75.83	5	4 6 40.37	21.764	16 11 36.2	46.92
6	2 28 52.12	19.945	11 18 8.8	75.39	6	4 8 51.09	21.808	16 16 15.4	46.13
7	2 30 51.89	19.978	11 25 39.8	74.93	7	4 11 2.07	21.852	16 20 49.8	45.35
8	2 32 51.85	20.009	11 33 8.0	74.48	8	4 13 13.31	21.894	16 25 19.6	44.56
9	2 34 52.00	20.043	11 40 33.6	74.02	9	4 15 24.80	21.938	16 29 44.5	43.76
10	2 36 52.36	20.076	11 47 56.3	73.55	10	4 17 36.56	21.982	16 34 4.7	42.96
11	2 38 52.91	20.108	11 55 16.2	73.08	11	4 19 48.58	22.025	16 38 20.0	42.13
12	2 40 53.66	20.142	12 2 33.2	72.59	12	4 22 0.86	22.068	16 42 30.3	41.31
13	2 42 54.62	20.177	12 9 47.3	72.11	13	4 24 13.40	22.113	16 46 35.7	40.49
14	2 44 55.78	20.212	12 16 58.5	71.62	14	4 26 26.21	22.156	16 50 36.2	39.65
15	2 46 57.16	20.247	12 24 6.7	71.11	15	4 28 39.27	22.198	16 54 31.5	38.80
16	2 48 58.74	20.282	12 31 11.8	70.60	16	4 30 52.59	22.242	16 58 21.8	37.96
17	2 51 0.54	20.318	12 38 13.9	70.09	17	4 33 6.17	22.286	17 2 7.0	37.10
18	2 53 2.55	20.353	12 45 12.9	69.57	18	4 35 20.02	22.329	17 5 47.0	36.23
19	2 55 4.77	20.388	12 52 8.7	69.03	19	4 37 34.12	22.372	17 9 21.7	35.35
20	2 57 7.21	20.425	12 59 1.3	68.50	20	4 39 48.48	22.416	17 12 51.2	34.48
21	2 59 9.87	20.463	13 5 50.7	67.97	21	4 42 3.11	22.459	17 16 15.4	33.59
22	3 1 12.76	20.499	13 12 36.9	67.42	22	4 44 17.99	22.501	17 19 34.3	32.70
23	3 3 15.86	20.536	13 19 19.7	66.86	23	4 46 33.12	22.544	17 22 47.8	31.79
24	3 5 19.19	20.574	N. 13 25 59.2	66.29	24	4 48 48.52	22.588	N. 17 25 55.8	30.88

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>THURSDAY 17.</b>					<b>SATURDAY 19.</b>				
	h m s	s	N. 17° 25' 55" 8	30.88		h m s	s	N. 17° 57' 22" 4	19.81
0	4 48 48.52	22.588	17 25 55.8	30.88	0	6 41 41.39	24.302	17 57 22.4	19.81
1	4 51 4.17	22.630	17 28 58.4	29.98	1	6 44 7.27	24.326	17 55 20.0	20.98
2	4 53 20.08	22.673	17 31 55.5	29.04	2	6 46 33.30	24.351	17 53 10.7	22.13
3	4 55 36.24	22.715	17 34 46.9	28.11	3	6 48 59.48	24.374	17 50 54.5	23.29
4	4 57 52.66	22.758	17 37 32.8	27.18	4	6 51 25.79	24.397	17 48 31.2	24.46
5	5 0 9.33	22.799	17 40 13.1	26.24	5	6 53 52.24	24.419	17 46 1.0	25.63
6	5 2 26.25	22.841	17 42 47.7	25.28	6	6 56 18.82	24.441	17 43 23.7	26.80
7	5 4 43.42	22.883	17 45 16.5	24.33	7	6 58 45.53	24.462	17 40 39.4	27.97
8	5 7 0.85	22.925	17 47 39.6	23.36	8	7 1 12.36	24.483	17 37 48.1	29.13
9	5 9 18.52	22.966	17 49 56.8	22.39	9	7 3 39.32	24.503	17 34 49.8	30.30
10	5 11 36.44	23.008	17 52 8.3	21.42	10	7 6 6.39	24.521	17 31 44.5	31.47
11	5 13 54.61	23.048	17 54 13.8	20.43	11	7 8 33.57	24.540	17 28 32.2	32.64
12	5 16 13.02	23.088	17 56 13.4	19.43	12	7 11 0.87	24.559	17 25 12.8	33.82
13	5 18 31.67	23.129	17 58 7.0	18.44	13	7 13 28.28	24.576	17 21 46.4	34.98
14	5 20 50.57	23.169	17 59 54.7	17.44	14	7 15 55.78	24.593	17 18 13.0	36.16
15	5 23 9.70	23.209	18 1 36.3	16.43	15	7 18 23.39	24.609	17 14 32.5	37.33
16	5 25 29.08	23.249	18 3 11.8	15.41	16	7 20 51.09	24.624	17 10 45.1	38.49
17	5 27 48.69	23.288	18 4 41.2	14.38	17	7 23 18.88	24.639	17 6 50.6	39.67
18	5 30 8.53	23.327	18 6 4.4	13.36	18	7 25 46.76	24.654	17 2 49.1	40.83
19	5 32 28.61	23.365	18 7 21.5	12.33	19	7 28 14.73	24.668	16 58 40.7	41.99
20	5 34 48.91	23.403	18 8 32.3	11.28	20	7 30 42.77	24.680	16 54 25.2	43.16
21	5 37 9.45	23.442	18 9 36.9	10.24	21	7 33 10.89	24.693	16 50 2.8	44.32
22	5 39 30.21	23.479	18 10 35.2	9.18	22	7 35 39.09	24.705	16 45 33.4	45.48
23	5 41 51.20	23.517	N. 18 11 27.1	8.13	23	7 38 7.35	24.716	N. 16 40 57.1	46.63
<b>FRIDAY 18.</b>					<b>SUNDAY 20.</b>				
	h m s	s	N. 18 12 12.7	7.07		h m s	s	N. 16 36 13.8	47.79
0	5 44 12.41	23.553	18 12 12.7	7.07	0	7 40 35.68	24.727	16 36 13.8	47.79
1	5 46 33.84	23.589	18 12 51.9	5.99	1	7 43 4.07	24.737	16 31 23.6	48.94
2	5 48 55.48	23.625	18 13 24.6	4.92	2	7 45 32.52	24.746	16 26 26.5	50.09
3	5 51 17.34	23.662	18 13 50.9	3.84	3	7 48 1.02	24.754	16 21 22.5	51.23
4	5 53 39.42	23.698	18 14 10.7	2.76	4	7 50 29.57	24.763	16 16 11.7	52.38
5	5 56 1.71	23.732	18 14 24.0	1.67	5	7 52 58.17	24.770	16 10 54.0	53.52
6	5 58 24.20	23.766	18 14 30.7	0.58	6	7 55 26.81	24.778	16 5 29.5	54.65
7	6 0 46.90	23.800	18 14 30.9	0.53	7	7 57 55.50	24.784	15 59 58.2	55.78
8	6 3 9.80	23.833	18 14 24.4	1.63	8	8 0 24.22	24.789	15 54 20.1	56.91
9	6 5 32.90	23.867	18 14 11.3	2.74	9	8 2 52.97	24.794	15 48 35.3	58.03
10	6 7 56.20	23.899	18 13 51.5	3.85	10	8 5 21.75	24.799	15 42 43.7	59.15
11	6 10 19.69	23.931	18 13 25.1	4.97	11	8 7 50.56	24.803	15 36 45.5	60.26
12	6 12 43.37	23.963	18 12 51.9	6.09	12	8 10 19.39	24.807	15 30 40.6	61.37
13	6 15 7.24	23.994	18 12 12.0	7.21	13	8 12 48.24	24.809	15 24 29.1	62.47
14	6 17 31.30	24.026	18 11 25.4	8.34	14	8 15 17.10	24.812	15 18 11.0	63.56
15	6 19 55.55	24.056	18 10 31.9	9.48	15	8 17 45.98	24.814	15 11 46.4	64.65
16	6 22 19.97	24.085	18 9 31.7	10.61	16	8 20 14.87	24.815	15 5 15.2	65.73
17	6 24 44.57	24.113	18 8 24.6	11.75	17	8 22 43.76	24.815	14 58 37.6	66.81
18	6 27 9.33	24.142	18 7 10.7	12.89	18	8 25 12.65	24.815	14 51 53.5	67.88
19	6 29 34.27	24.171	18 5 49.9	14.04	19	8 27 41.54	24.815	14 45 3.0	68.95
20	6 31 59.38	24.198	18 4 22.2	15.19	20	8 30 10.43	24.814	14 38 6.1	70.01
21	6 34 24.65	24.224	18 2 47.6	16.34	21	8 32 39.31	24.813	14 31 2.9	71.06
22	6 36 50.07	24.250	18 1 6.1	17.49	22	8 35 8.18	24.811	14 23 53.4	72.10
23	6 39 15.65	24.277	17 59 17.7	18.64	23	8 37 37.04	24.809	14 16 37.7	73.13
24	6 41 41.39	24.302	N. 17 57 22.4	19.81	24	8 40 5.89	24.806	N. 14 9 15.8	74.16

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 21.</b>					<b>WEDNESDAY 23.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	8 40 5.89	24.806	N. 14 9 15.8	74.16	0	10 38 6.99	24.273	N. 6 34 9.8	110.82
1	8 42 34.71	24.802	14 1 47.8	75.18	1	10 40 32.58	24.258	6 23 3.5	111.26
2	8 45 3.51	24.798	13 54 13.7	76.19	2	10 42 58.09	24.243	6 11 54.7	111.68
3	8 47 32.28	24.793	13 46 33.5	77.20	3	10 45 23.50	24.228	6 0 43.4	112.09
4	8 50 1.03	24.789	13 38 47.3	78.19	4	10 47 48.82	24.213	5 49 29.6	112.49
5	8 52 29.75	24.783	13 30 55.2	79.18	5	10 50 14.05	24.198	5 38 13.5	112.87
6	8 54 58.43	24.778	13 22 57.2	80.16	6	10 52 39.19	24.183	5 26 55.1	113.24
7	8 57 27.08	24.772	13 14 53.3	81.13	7	10 55 4.24	24.168	5 15 34.6	113.59
8	8 59 55.69	24.765	13 6 43.7	82.08	8	10 57 29.20	24.152	5 4 12.0	113.93
9	9 2 24.26	24.758	12 58 28.4	83.03	9	10 59 54.06	24.137	4 52 47.4	114.25
10	9 4 52.79	24.751	12 50 7.4	83.97	10	11 2 18.84	24.123	4 41 21.0	114.56
11	9 7 21.27	24.743	12 41 40.8	84.89	11	11 4 43.53	24.108	4 29 52.7	114.85
12	9 9 49.71	24.735	12 33 8.7	85.82	12	11 7 8.13	24.093	4 18 22.8	115.13
13	9 12 18.09	24.726	12 24 31.0	86.73	13	11 9 32.64	24.078	4 6 51.2	115.39
14	9 14 46.42	24.718	12 15 48.0	87.62	14	11 11 57.06	24.063	3 55 18.1	115.64
15	9 17 14.70	24.708	12 6 59.6	88.51	15	11 14 21.39	24.048	3 43 43.5	115.87
16	9 19 42.92	24.699	11 58 5.9	89.38	16	11 16 45.64	24.034	3 32 7.6	116.08
17	9 22 11.09	24.689	11 49 7.0	90.25	17	11 19 9.80	24.019	3 20 30.5	116.28
18	9 24 39.19	24.678	11 40 2.9	91.10	18	11 21 33.87	24.005	3 8 52.2	116.47
19	9 27 7.23	24.668	11 30 53.8	91.94	19	11 23 57.86	23.992	2 57 12.8	116.64
20	9 29 35.20	24.657	11 21 39.6	92.77	20	11 26 21.77	23.978	2 45 32.5	116.80
21	9 32 3.11	24.647	11 12 20.5	93.59	21	11 28 45.59	23.963	2 33 51.2	116.95
22	9 34 30.96	24.635	11 2 56.5	94.41	22	11 31 9.33	23.949	2 22 9.1	117.07
23	9 36 58.73	24.623	N. 10 53 27.6	95.20	23	11 33 32.98	23.935	N. 2 10 26.4	117.18
<b>TUESDAY 22.</b>					<b>THURSDAY 24.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	9 39 26.44	24.612	N. 10 43 54.1	95.98	0	11 35 56.55	23.922	N. 1 58 43.0	117.28
1	9 41 54.07	24.598	10 34 15.9	96.75	1	11 38 20.04	23.908	1 46 59.1	117.36
2	9 44 21.62	24.586	10 24 33.1	97.52	2	11 40 43.45	23.895	1 35 14.7	117.43
3	9 46 49.10	24.574	10 14 45.7	98.26	3	11 43 6.78	23.882	1 23 30.0	117.48
4	9 49 16.51	24.561	10 4 54.0	98.98	4	11 45 30.03	23.869	1 11 45.0	117.51
5	9 51 43.83	24.548	9 54 57.9	99.72	5	11 47 53.21	23.857	0 59 59.9	117.53
6	9 54 11.08	24.535	9 44 57.4	100.43	6	11 50 16.31	23.843	0 48 14.7	117.53
7	9 56 38.25	24.521	9 34 52.8	101.11	7	11 52 39.33	23.831	0 36 29.5	117.53
8	9 59 5.33	24.508	9 24 44.1	101.79	8	11 55 2.28	23.818	0 24 44.4	117.51
9	10 1 32.34	24.494	9 14 31.3	102.47	9	11 57 25.15	23.806	0 12 59.4	117.47
10	10 3 59.26	24.479	9 4 14.5	103.12	10	11 59 47.95	23.794	N. 0 1 14.8	117.41
11	10 6 26.09	24.465	8 53 53.9	103.76	11	12 2 10.68	23.783	S. 0 10 29.5	117.35
12	10 8 52.84	24.452	8 43 29.4	104.38	12	12 4 33.34	23.771	0 22 13.4	117.28
13	10 11 19.51	24.437	8 33 1.3	104.99	13	12 6 55.93	23.759	0 33 56.8	117.18
14	10 13 46.08	24.422	8 22 29.5	105.60	14	12 9 18.45	23.748	0 45 39.5	117.06
15	10 16 12.57	24.408	8 11 54.1	106.19	15	12 11 40.90	23.737	0 57 21.5	116.93
16	10 18 38.98	24.393	8 1 15.2	106.76	16	12 14 3.29	23.726	1 9 2.7	116.80
17	10 21 5.29	24.378	7 50 33.0	107.31	17	12 16 25.61	23.715	1 20 43.1	116.65
18	10 23 31.52	24.364	7 39 47.5	107.86	18	12 18 47.87	23.704	1 32 22.5	116.48
19	10 25 57.66	24.348	7 28 58.7	108.39	19	12 21 10.06	23.693	1 44 0.8	116.30
20	10 28 23.70	24.333	7 18 6.8	108.90	20	12 23 32.19	23.683	1 55 38.1	116.11
21	10 30 49.66	24.319	7 7 11.9	109.40	21	12 25 54.26	23.673	2 7 14.1	115.89
22	10 33 15.53	24.303	6 56 14.0	109.88	22	12 28 16.27	23.663	2 18 48.8	115.68
23	10 35 41.30	24.288	6 45 13.3	110.35	23	12 30 38.22	23.653	2 30 22.2	115.44
24	10 38 6.99	24.273	N. 6 34 9.8	110.82	24	12 33 0.11	23.644	S. 2 41 54.1	115.18

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>FRIDAY 25.</b>					<b>SUNDAY 27.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	12 33 0.11	23.644	S. 2 41 54.1	115.18	0	14 25 42.79	23.369	S. 11 2 43.4	89.31
1	12 35 21.95	23.635	2 53 24.4	114.92	1	14 28 3.00	23.367	11 11 36.9	88.53
2	12 37 43.73	23.626	3 4 53.1	114.65	2	14 30 23.19	23.363	11 20 25.7	87.74
3	12 40 5.46	23.618	3 16 20.2	114.37	3	14 32 43.36	23.359	11 29 9.8	86.95
4	12 42 27.14	23.608	3 27 45.5	114.06	4	14 35 3.50	23.356	11 37 49.1	86.14
5	12 44 48.76	23.599	3 39 8.9	113.73	5	14 37 23.63	23.353	11 46 23.5	85.33
6	12 47 10.33	23.591	3 50 30.3	113.41	6	14 39 43.74	23.350	11 54 53.1	84.52
7	12 49 31.85	23.583	4 1 49.8	113.08	7	14 42 3.83	23.347	12 3 17.7	83.69
8	12 51 53.32	23.575	4 13 7.2	112.72	8	14 44 23.90	23.343	12 11 37.4	82.86
9	12 54 14.75	23.567	4 24 22.4	112.34	9	14 46 43.94	23.339	12 19 52.0	82.02
10	12 56 36.12	23.558	4 35 35.3	111.96	10	14 49 3.97	23.337	12 28 1.6	81.18
11	12 58 57.45	23.551	4 46 45.9	111.58	11	14 51 23.98	23.333	12 36 6.1	80.33
12	13 1 18.73	23.544	4 57 54.2	111.18	12	14 53 43.97	23.330	12 44 5.5	79.47
13	13 3 39.98	23.537	5 9 0.0	110.76	13	14 56 3.94	23.326	12 51 59.7	78.60
14	13 6 1.18	23.529	5 20 3.3	110.33	14	14 58 23.88	23.323	12 59 48.7	77.73
15	13 8 22.33	23.523	5 31 4.0	109.88	15	15 0 43.81	23.319	13 7 32.5	76.85
16	13 10 43.45	23.517	5 42 1.9	109.43	16	15 3 3.71	23.315	13 15 10.9	75.97
17	13 13 4.53	23.510	5 52 57.1	108.97	17	15 5 23.59	23.312	13 22 44.1	75.07
18	13 15 25.57	23.503	6 3 49.5	108.48	18	15 7 43.45	23.308	13 30 11.9	74.19
19	13 17 46.57	23.498	6 14 38.9	107.99	19	15 10 3.28	23.303	13 37 34.4	73.29
20	13 20 7.54	23.492	6 25 25.4	107.50	20	15 12 23.09	23.300	13 44 51.4	72.38
21	13 22 28.47	23.485	6 36 8.9	106.98	21	15 14 42.88	23.296	13 52 3.0	71.48
22	13 24 49.36	23.479	6 46 49.2	106.46	22	15 17 2.64	23.292	13 59 9.1	70.56
23	13 27 10.22	23.474	S. 6 57 26.4	105.93	23	15 19 22.38	23.288	S. 14 6 9.7	69.63
<b>SATURDAY 26.</b>					<b>MONDAY 28.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	13 29 31.05	23.469	S. 7 8 0.3	105.38	0	15 21 42.09	23.283	S. 14 13 4.7	68.71
1	13 31 51.85	23.463	7 18 30.9	104.83	1	15 24 1.78	23.278	14 19 54.2	67.78
2	13 34 12.61	23.458	7 28 58.2	104.26	2	15 26 21.43	23.273	14 26 38.1	66.85
3	13 36 33.35	23.453	7 39 22.0	103.68	3	15 28 41.06	23.270	14 33 16.4	65.91
4	13 38 54.05	23.448	7 49 42.4	103.10	4	15 31 0.67	23.265	14 39 49.0	64.96
5	13 41 14.72	23.443	7 59 59.2	102.49	5	15 33 20.24	23.259	14 46 15.9	64.02
6	13 43 35.37	23.439	8 10 12.3	101.88	6	15 35 39.78	23.254	14 52 37.2	63.07
7	13 45 55.99	23.434	8 20 21.8	101.27	7	15 37 59.29	23.249	14 58 52.7	62.11
8	13 48 16.58	23.430	8 30 27.5	100.63	8	15 40 18.77	23.243	15 5 2.5	61.15
9	13 50 37.15	23.426	8 40 29.4	100.00	9	15 42 38.21	23.238	15 11 6.5	60.18
10	13 52 57.69	23.421	8 50 27.5	99.35	10	15 44 57.62	23.232	15 17 4.7	59.22
11	13 55 18.20	23.417	9 0 21.6	98.69	11	15 47 16.99	23.226	15 22 57.1	58.24
12	13 57 38.69	23.413	9 10 11.8	98.03	12	15 49 36.33	23.221	15 28 43.6	57.27
13	13 59 59.15	23.408	9 19 57.9	97.35	13	15 51 55.64	23.214	15 34 24.3	56.30
14	14 2 19.59	23.405	9 29 40.0	96.66	14	15 54 14.90	23.207	15 39 59.2	55.32
15	14 4 40.01	23.401	9 39 17.8	95.96	15	15 56 34.12	23.201	15 45 28.1	54.33
16	14 7 0.40	23.398	9 48 51.5	95.27	16	15 58 53.31	23.194	15 50 51.1	53.34
17	14 9 20.78	23.394	9 58 21.0	94.55	17	16 1 12.45	23.187	15 56 8.2	52.36
18	14 11 41.13	23.390	10 7 46.1	93.82	18	16 3 31.55	23.179	16 1 19.4	51.37
19	14 14 1.46	23.387	10 17 6.8	93.08	19	16 5 50.60	23.172	16 6 24.6	50.37
20	14 16 21.77	23.383	10 26 23.1	92.35	20	16 8 9.61	23.164	16 11 23.8	49.37
21	14 18 42.05	23.379	10 35 35.0	91.61	21	16 10 28.57	23.157	16 16 17.0	48.37
22	14 21 2.32	23.377	10 44 42.4	90.85	22	16 12 47.49	23.148	16 21 4.2	47.37
23	14 23 22.57	23.373	10 53 45.2	90.08	23	16 15 6.35	23.140	16 25 45.4	46.37
24	14 25 42.79	23.369	S. 11 2 43.4	89.31	24	16 17 25.17	23.132	S. 16 30 20.6	45.36

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
TUESDAY 29.					THURSDAY 31.				
	h m s	s	S. 16 30 20.6	45.36		h m s	s	S. 18 11 14.0	3.03
0	16 17 25.17	23.132			0	18 6 58.35	22.410		
1	16 19 43.93	23.123	16 34 49.7	44.35	1	18 9 12.75	22.388	18 10 52.9	4.00
2	16 22 2.64	23.114	16 39 12.8	43.34	2	18 11 27.01	22.366	18 10 26.0	4.97
3	16 24 21.30	23.105	16 43 29.8	42.33	3	18 13 41.14	22.344	18 9 53.3	5.93
4	16 26 39.90	23.095	16 47 40.8	41.33	4	18 15 55.14	22.322	18 9 14.8	6.89
5	16 28 58.44	23.085	16 51 45.7	40.31	5	18 18 9.00	22.298	18 8 30.6	7.84
6	16 31 16.92	23.075	16 55 44.5	39.29	6	18 20 22.72	22.276	18 7 40.7	8.80
7	16 33 35.34	23.065	16 59 37.2	38.28	7	18 22 36.31	22.253	18 6 45.0	9.75
8	16 35 53.70	23.055	17 3 23.8	37.26	8	18 24 49.76	22.229	18 5 43.7	10.69
9	16 38 12.00	23.044	17 7 4.3	36.24	9	18 27 3.06	22.206	18 4 36.7	11.63
10	16 40 30.23	23.033	17 10 38.7	35.22	10	18 29 16.23	22.183	18 3 24.1	12.58
11	16 42 48.39	23.022	17 14 6.9	34.20	11	18 31 29.25	22.158	18 2 5.8	13.52
12	16 45 6.49	23.010	17 17 29.1	33.18	12	18 33 42.12	22.133	18 0 41.9	14.45
13	16 47 24.51	22.998	17 20 45.1	32.17	13	18 35 54.85	22.109	17 59 12.4	15.38
14	16 49 42.46	22.986	17 23 55.1	31.15	14	18 38 7.43	22.084	17 57 37.4	16.29
15	16 52 0.34	22.974	17 26 58.9	30.12	15	18 40 19.86	22.059	17 55 56.9	17.22
16	16 54 18.15	22.962	17 29 56.5	29.10	16	18 42 32.14	22.033	17 54 10.8	18.13
17	16 56 35.88	22.948	17 32 48.1	28.08	17	18 44 44.26	22.008	17 52 19.3	19.04
18	16 58 53.53	22.935	17 35 33.5	27.06	18	18 46 56.24	21.983	17 50 22.3	19.95
19	17 1 11.10	22.922	17 38 12.8	26.04	19	18 49 8.06	21.958	17 48 19.9	20.86
20	17 3 28.59	22.908	17 40 46.0	25.02	20	18 51 19.73	21.932	17 46 12.0	21.76
21	17 5 46.00	22.894	17 43 13.0	24.00	21	18 53 31.24	21.906	17 43 58.8	22.65
22	17 8 3.32	22.879	17 45 34.0	22.98	22	18 55 42.60	21.879	17 41 40.2	23.54
23	17 10 20.55	22.865	S. 17 47 48.8	21.96	23	18 57 53.79	21.853	S. 17 39 16.3	24.43
WEDNESDAY 30.					FRIDAY, SEPT. 1.				
0	17 12 37.70	22.850	S. 17 49 57.5	20.94	0	19 0 4.83	21.827	S. 17 36 47.1	25.31
1	17 14 54.75	22.835	17 52 0.1	19.93					
2	17 17 11.72	22.820	17 53 56.6	18.91					
3	17 19 28.59	22.804	17 55 47.0	17.90					
4	17 21 45.37	22.788	17 57 31.4	16.88					
5	17 24 2.05	22.772	17 59 9.6	15.87					
6	17 26 18.63	22.755	18 0 41.8	14.86					
7	17 28 35.11	22.738	18 2 7.9	13.84					
8	17 30 51.49	22.721	18 3 27.9	12.83					
9	17 33 7.76	22.703	18 4 41.9	11.83					
10	17 35 23.93	22.687	18 5 49.9	10.83					
11	17 37 40.00	22.668	18 6 51.8	9.82					
12	17 39 55.95	22.650	18 7 47.7	8.82					
13	17 42 11.80	22.632	18 8 37.6	7.82					
14	17 44 27.53	22.613	18 9 21.5	6.83					
15	17 46 43.15	22.594	18 9 59.5	5.83					
16	17 48 58.66	22.575	18 10 31.4	4.83					
17	17 51 14.05	22.554	18 10 57.4	3.84					
18	17 53 29.31	22.534	18 11 17.5	2.85					
19	17 55 44.46	22.515	18 11 31.6	1.86					
20	17 57 59.49	22.495	18 11 39.8	0.88					
21	18 0 14.40	22.474	18 11 42.2	0.10					
22	18 2 29.18	22.453	18 11 38.6	1.08					
23	18 4 43.83	22.431	18 11 29.2	2.05					
24	18 6 58.35	22.410	S. 18 11 14.0	3.03					

PHASES OF THE MOON.

Aug. 7	○ Full Moon	- -	h m
15	☾ Last Quarter	- -	8 45.8
22	● New Moon	- -	8 34.0
28	☽ First Quarter	-	23 54.9

Aug. 10	☾ Apogee	- - - -	h
23	☾ Perigee	- - - -	7.7

## AT APPARENT NOON.

Date.	THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be added to		— V — 9 Var. in 1 7 hour. 6
	Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.		subtracted from Apparent Time.		
	h m s	s	° ′ ″	″	m s	m s	s	
Frid.	1 10 39 35.26	9.075	N. 8 28 43.9	54.23	1 4.37	0 7.51	0.780	
Sat.	2 10 43 12.89	9.062	8 6 58.2	54.56	1 4.33	0 11.36	0.793	
Sun.	3 10 46 50.22	9.049	7 45 4.8	54.88	1 4.29	0 30.53	0.805	
Mon.	4 10 50 27.26	9.038	7 23 3.9	55.19	1 4.25	0 49.99	0.816	
Tues.	5 10 54 4.05	9.028	7 0 55.8	55.48	1 4.21	1 9.70	0.826	
Wed.	6 10 57 40.60	9.018	6 38 40.9	55.76	1 4.18	1 29.65	0.836	
Thur.	7 11 1 16.93	9.010	6 16 19.4	56.03	1 4.15	1 49.82	0.844	
Frid.	8 11 4 53.06	9.002	5 53 51.7	56.28	1 4.12	2 10.18	0.852	
Sat.	9 11 8 29.01	8.995	5 31 18.0	56.52	1 4.09	2 30.72	0.859	
Sun.	10 11 12 4.82	8.989	5 8 38.7	56.75	1 4.07	2 51.41	0.865	
Mon.	11 11 15 40.49	8.984	4 45 54.1	56.96	1 4.05	3 12.24	0.870	
Tues.	12 11 19 16.04	8.980	4 23 4.5	57.16	1 4.03	3 33.18	0.874	
Wed.	13 11 22 51.51	8.976	4 0 10.3	57.35	1 4.02	3 54.20	0.877	
Thur.	14 11 26 26.91	8.974	3 37 11.8	57.52	1 4.01	4 15.30	0.880	
Frid.	15 11 30 2.26	8.972	3 14 9.2	57.69	1 4.00	4 36.45	0.882	
Sat.	16 11 33 37.58	8.971	2 51 2.9	57.83	1 3.99	4 57.62	0.882	
Sun.	17 11 37 12.89	8.971	2 27 53.3	57.96	1 3.99	5 18.80	0.882	
Mon.	18 11 40 48.21	8.972	2 4 40.7	58.08	1 3.99	5 39.98	0.882	
Tues.	19 11 44 23.55	8.974	1 41 25.5	58.18	1 3.99	6 1.12	0.880	
Wed.	20 11 47 58.94	8.976	1 18 7.9	58.27	1 4.00	6 22.23	0.878	
Thur.	21 11 51 34.38	8.978	0 54 48.4	58.35	1 4.01	6 43.28	0.876	
Frid.	22 11 55 9.90	8.982	0 31 27.3	58.40	1 4.02	7 4.26	0.872	
Sat.	23 11 58 45.50	8.986	N. 0 8 5.0	58.45	1 4.03	7 25.15	0.868	
Sun.	24 12 2 21.21	8.990	S. 0 15 18.2	58.48	1 4.05	7 45.94	0.864	
Mon.	25 12 5 57.04	8.996	0 38 41.8	58.49	1 4.08	8 6.61	0.858	
Tues.	26 12 9 33.00	9.002	1 2 5.6	58.49	1 4.10	8 27.14	0.852	
Wed.	27 12 13 9.12	9.009	1 25 29.2	58.47	1 4.13	8 47.51	0.845	
Thur.	28 12 16 45.42	9.017	1 48 52.2	58.44	1 4.16	9 7.71	0.837	
Frid.	29 12 20 21.92	9.025	2 12 14.4	58.40	1 4.19	9 27.71	0.829	
Sat.	30 12 23 58.64	9.035	2 35 35.3	58.34	1 4.23	9 47.48	0.819	
Sun.	31 12 27 35.60	9.046	S. 2 58 54.6	58.26	1 4.27	10 7.02	0.809	

\* Mean Time of the Semidiameter passing may be found by subtracting 0.18 from the Sidereal Time.



## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be added to	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi- diameter.*	subtracted from Apparent Time.	
		h m s	N. ° ' "	' "	m s	h m s
Frid.	1	10 39 35.24	N. 8 28 44.0	15 52.64	0 7.51	10 39 27.73
Sat.	2	10 43 12.92	8 6 58.1	15 52.88	0 11.37	10 43 24.28
Sun.	3	10 46 50.29	7 45 4.4	15 53.11	0 30.54	10 47 20.84
Mon.	4	10 50 27.39	7 23 3.2	15 53.35	0 50.00	10 51 17.39
Tues.	5	10 54 4.22	7 0 54.8	15 53.59	1 9.72	10 55 13.94
Wed.	6	10 57 40.82	6 38 39.5	15 53.83	1 29.67	10 59 10.49
Thur.	7	11 1 17.20	6 16 17.7	15 54.07	1 49.84	11 3 7.04
Frid.	8	11 4 53.38	5 53 49.6	15 54.31	2 10.21	11 7 3.60
Sat.	9	11 8 29.39	5 31 15.6	15 54.55	2 30.76	11 11 0.15
Sun.	10	11 12 5.24	5 8 36.0	15 54.79	2 51.46	11 14 56.70
Mon.	11	11 15 40.96	4 45 51.1	15 55.04	3 12.29	11 18 53.25
Tues.	12	11 19 16.57	4 23 1.2	15 55.28	3 33.23	11 22 49.80
Wed.	13	11 22 52.09	4 0 6.6	15 55.53	3 54.26	11 26 46.36
Thur.	14	11 26 27.54	3 37 7.7	15 55.78	4 15.36	11 30 42.91
Frid.	15	11 30 2.95	3 14 4.8	15 56.03	4 36.51	11 34 39.46
Sat.	16	11 33 38.32	2 50 58.2	15 56.28	4 57.69	11 38 36.01
Sun.	17	11 37 13.68	2 27 48.2	15 56.54	5 18.88	11 42 32.56
Mon.	18	11 40 49.06	2 4 35.2	15 56.79	5 40.06	11 46 29.12
Tues.	19	11 44 24.45	1 41 19.6	15 57.05	6 1.21	11 50 25.67
Wed.	20	11 47 59.89	1 18 1.7	15 57.32	6 22.32	11 54 22.22
Thur.	21	11 51 35.39	0 54 41.9	15 57.59	6 43.38	11 58 18.77
Frid.	22	11 55 10.96	0 31 20.4	15 57.85	7 4.36	12 2 15.32
Sat.	23	11 58 46.61	N. 0 7 57.8	15 58.12	7 25.26	12 6 11.87
Sun.	24	12 2 22.37	S. 0 15 25.7	15 58.40	7 46.05	12 10 8.42
Mon.	25	12 5 58.25	0 38 49.7	15 58.67	8 6.72	12 14 4.98
Tues.	26	12 9 34.27	1 2 13.9	15 58.95	8 27.26	12 18 1.53
Wed.	27	12 13 10.44	1 25 37.8	15 59.23	8 47.64	12 21 58.08
Thur.	28	12 16 46.80	1 49 1.1	15 59.51	9 7.84	12 25 54.63
Frid.	29	12 20 23.35	2 12 23.6	15 59.79	9 27.84	12 29 51.18
Sat.	30	12 24 0.12	2 35 44.8	16 0.07	9 47.62	12 33 47.73
Sun.	31	12 27 37.13	S. 2 59 4.4	16 0.35	10 7.16	12 37 44.29

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	<i>Apparent</i>				Semidiameter.		Horizontal Parallax.	
	Longitude.	Latitude.			Noon.	Midnight.	Noon.	Midnight.
	<i>Noon.</i>	<i>Noon.</i>	<i>Noon.</i>		<i>Noon.</i>	<i>Midnight.</i>	<i>Noon.</i>	<i>Midnight.</i>
				h m s				
1	158° 15' 1.0	N. 0.56	0.0038749	13 18 21.12	15 11.86	15 7.51	55 40.82	55 24.88
2	159 13 5.9	0.52	0.0037685	13 14 25.22	15 3.55	14 59.99	55 10.38	54 57.31
3	160 11 12.3	0.46	0.0036614	13 10 29.31	14 56.79	14 53.97	54 45.62	54 35.28
4	161 9 20.3	0.37	0.0035537	13 6 33.40	14 51.51	14 49.39	54 26.25	54 18.49
5	162 7 29.9	0.27	0.0034454	13 2 37.50	14 47.61	14 46.18	54 11.98	54 6.73
6	163 5 41.3	0.15	0.0033365	12 58 41.59	14 45.08	14 44.34	54 2.72	54 0.00
7	164 3 54.4	N. 0.03	0.0032272	12 54 45.68	14 43.95	14 43.94	53 58.57	53 58.54
8	165 2 9.3	S. 0.10	0.0031174	12 50 49.78	14 44.32	14 45.12	53 59.94	54 2.87
9	166 0 26.1	0.23	0.0030071	12 46 53.87	14 46.37	14 48.07	54 7.42	54 13.68
10	166 58 44.9	0.33	0.0028963	12 42 57.97	14 50.28	14 52.99	54 21.75	54 31.70
11	167 57 5.6	0.43	0.0027850	12 39 2.06	14 56.26	15 0.07	54 43.65	54 57.62
12	168 55 28.4	0.51	0.0026731	12 35 6.15	15 4.45	15 9.40	55 13.66	55 31.79
13	169 53 53.4	0.55	0.0025606	12 31 10.25	15 14.90	15 20.93	55 51.96	56 14.08
14	170 52 20.4	0.58	0.0024475	12 27 14.34	15 27.47	15 34.45	56 38.04	57 3.60
15	171 50 49.6	0.57	0.0023335	12 23 18.44	15 41.80	15 49.41	57 30.50	57 58.37
16	172 49 21.1	0.53	0.0022186	12 19 22.53	15 57.14	16 4.90	58 26.74	58 55.15
17	173 47 54.7	0.46	0.0021028	12 15 26.62	16 12.47	16 19.70	59 22.91	59 49.40
18	174 46 30.4	0.36	0.0019859	12 11 30.72	16 26.38	16 32.33	60 13.90	60 35.67
19	175 45 8.3	0.23	0.0018678	12 7 34.81	16 37.34	16 41.26	60 54.04	61 8.37
20	176 43 48.3	S. 0.10	0.0017485	12 3 38.91	16 43.94	16 45.27	61 18.19	61 23.08
21	177 42 30.3	N. 0.05	0.0016280	11 59 43.00	16 45.22	16 43.78	61 22.90	61 17.63
22	178 41 14.2	0.19	0.0015062	11 55 47.10	16 41.02	16 37.03	61 7.52	60 52.88
23	179 40 0.0	0.32	0.0013832	11 51 51.19	16 31.95	16 25.96	60 34.30	60 12.36
24	180 38 47.6	0.44	0.0012592	11 47 55.28	16 19.26	16 12.04	59 47.80	59 21.32
25	181 37 37.0	0.54	0.0011343	11 43 59.38	16 4.48	15 56.76	58 53.61	58 25.35
26	182 36 28.0	0.60	0.0010086	11 40 3.47	15 49.07	15 41.52	57 57.15	57 29.50
27	183 35 20.8	0.63	0.0008824	11 36 7.57	15 34.25	15 27.34	57 2.85	56 37.56
28	184 34 15.4	0.63	0.0007558	11 32 11.66	15 20.87	15 14.91	56 13.86	55 51.99
29	185 33 11.6	0.61	0.0006290	11 28 15.76	15 9.47	15 4.58	55 32.04	55 14.13
30	186 32 9.6	0.56	0.0005021	11 24 19.85	15 0.24	14 56.46	54 58.24	54 44.40
31	187 31 9.4	N. 0.47	0.0003753	11 20 23.94	14 53.22	14 50.51	54 32.53	54 22.60

## MEAN TIME.

Day.	THE MOON'S						
	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
1	284° 21' 30.2	290° 36' 50.5	N. 5° 5' 16.9	N. 4° 54' 57.6	d 9.64	h m 8 37.9	h m 21 2.5
2	296 48 53.9	302 57 58.1	4 41 15.3	4 24 23.6	10.64	9 26.6	21 50.2
3	309 4 20.0	315 8 15.5	4 4 37.3	3 42 12.2	11.64	10 13.3	22 36.1
4	321 10 0.2	327 9 49.4	3 17 25.2	2 50 33.8	12.64	10 58.4	23 20.4
5	333 7 57.7	339 4 40.3	2 21 56.3	1 51 51.5	13.64	11 42.1	* *
6	345 0 12.0	350 54 48.9	1 20 38.6	N. 0 48 37.0	14.64	12 24.9	0 3.6
7	356 48 47.2	2 42 24.5	N. 0 16 6.2	S. 0 16 34.1	15.64	13 7.2	0 46.1
8	8 35 59.4	14 29 52.2	S. 0 49 4.4	1 21 5.8	16.64	13 49.6	1 28.3
9	20 24 24.2	26 19 58.4	1 52 19.1	2 22 25.8	17.64	14 32.7	2 11.0
10	32 17 0.0	38 15 55.0	2 51 7.5	3 18 6.2	18.64	15 16.9	2 54.6
11	44 17 11.6	50 21 18.5	3 43 4.3	4 5 44.3	19.64	16 2.9	3 39.7
12	56 28 46.1	62 40 5.0	4 25 49.1	4 43 1.6	20.64	16 51.0	4 26.7
13	68 55 46.0	75 16 19.1	4 57 5.2	5 7 43.7	21.64	17 41.4	5 15.9
14	81 42 12.7	88 13 53.4	5 14 41.3	5 17 43.4	22.64	18 34.0	6 7.4
15	94 51 43.8	101 36 2.1	5 16 36.7	5 11 9.9	23.64	19 28.4	7 1.0
16	108 27 0.4	115 24 44.1	5 1 14.4	4 46 45.5	24.64	20 24.2	7 56.2
17	122 29 9.5	129 40 3.8	4 27 43.1	4 4 12.6	25.64	21 20.6	8 52.4
18	136 57 3.9	144 19 35.9	3 36 26.4	3 4 44.0	26.64	22 17.3	9 49.0
19	151 46 55.7	159 18 9.6	2 29 32.7	1 51 27.4	27.64	23 13.7	10 45.5
20	166 52 15.1	174 28 4.5	S. 1 11 9.6	S. 0 29 26.5	28.64	* *	11 41.9
21	182 4 25.5	189 40 5.1	N. 0 12 51.2	N. 0 54 51.5	0.31	0 10.0	12 38.1
22	197 13 51.8	204 44 38.7	1 35 43.2	2 14 38.6	1.31	1 6.2	13 34.3
23	212 11 25.4	219 33 20.3	2 50 54.7	3 23 55.2	2.31	2 2.4	14 30.5
24	226 49 41.1	233 59 56.5	3 53 11.4	4 18 21.6	3.31	2 58.5	15 26.5
25	241 3 45.1	248 0 55.7	4 39 11.6	4 55 33.9	4.31	3 54.3	16 21.9
26	254 51 26.6	261 35 23.6	5 7 26.5	5 14 52.2	5.31	4 49.2	17 16.1
27	268 12 59.6	274 44 33.0	5 17 57.8	5 16 52.7	6.31	5 42.7	18 8.8
28	281 10 26.6	287 31 6.1	5 11 48.9	5 2 59.5	7.31	6 34.3	18 59.3
29	293 46 59.6	299 58 36.1	4 50 39.0	4 35 2.8	8.31	7 23.8	19 47.8
30	306 6 25.5	312 10 57.5	4 16 26.4	3 55 6.3	9.31	8 11.2	20 34.2
31	318 12 40.8	324 12 3.4	N. 3 31 18.8	N. 3 5 21.2	10.31	8 56.7	21 18.8

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>FRIDAY 1.</b>					<b>SUNDAY 3.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	19 0 4.83	21.827	S. 17 36 47.1	25.31	0	20 41 35.91	20.460	S. 14 3 28.2	61.44
1	19 2 15.71	21.800	17 34 12.6	26.18	1	20 43 38.58	20.432	13 57 17.7	62.06
2	19 4 26.43	21.773	17 31 32.9	27.06	2	20 45 41.09	20.405	13 51 3.5	62.66
3	19 6 36.98	21.746	17 28 47.9	27.93	3	20 47 43.44	20.377	13 44 45.8	63.26
4	19 8 47.38	21.719	17 25 57.8	28.78	4	20 49 45.61	20.348	13 38 24.4	63.86
5	19 10 57.61	21.691	17 23 2.5	29.65	5	20 51 47.62	20.321	13 31 59.5	64.43
6	19 13 7.67	21.663	17 20 2.0	30.50	6	20 53 49.46	20.293	13 25 31.2	65.02
7	19 15 17.57	21.637	17 16 56.5	31.34	7	20 55 51.14	20.267	13 18 59.3	65.60
8	19 17 27.31	21.608	17 13 45.9	32.19	8	20 57 52.66	20.239	13 12 24.0	66.17
9	19 19 36.87	21.580	17 10 30.2	33.03	9	20 59 54.01	20.211	13 5 45.3	66.73
10	19 21 46.27	21.553	17 7 9.5	33.87	10	21 1 55.19	20.184	12 59 3.3	67.28
11	19 23 55.51	21.525	17 3 43.8	34.69	11	21 3 56.22	20.158	12 52 18.0	67.83
12	19 26 4.57	21.496	17 0 13.2	35.51	12	21 5 57.09	20.131	12 45 29.3	68.38
13	19 28 13.46	21.468	16 56 37.7	36.33	13	21 7 57.79	20.103	12 38 37.4	68.91
14	19 30 22.19	21.440	16 52 57.3	37.14	14	21 9 58.33	20.077	12 31 42.4	69.44
15	19 32 30.74	21.411	16 49 12.0	37.95	15	21 11 58.72	20.052	12 24 44.1	69.97
16	19 34 39.12	21.383	16 45 21.9	38.75	16	21 13 58.95	20.025	12 17 42.7	70.49
17	19 36 47.33	21.354	16 41 27.0	39.55	17	21 15 59.02	19.999	12 10 38.2	71.00
18	19 38 55.37	21.326	16 37 27.3	40.34	18	21 17 58.94	19.974	12 3 30.7	71.51
19	19 41 3.24	21.298	16 33 22.9	41.13	19	21 19 58.71	19.948	11 56 20.1	72.01
20	19 43 10.94	21.268	16 29 13.8	41.91	20	21 21 58.32	19.923	11 49 6.6	72.50
21	19 45 18.46	21.239	16 25 0.0	42.68	21	21 23 57.78	19.898	11 41 50.1	72.99
22	19 47 25.81	21.210	16 20 41.6	43.45	22	21 25 57.09	19.872	11 34 30.7	73.48
23	19 49 32.98	21.182	S. 16 16 18.6	44.22	23	21 27 56.24	19.847	S. 11 27 8.4	73.95
<b>SATURDAY 2.</b>					<b>MONDAY 4.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	19 51 39.99	21.153	S. 16 11 51.0	44.98	0	21 29 55.25	19.823	S. 11 19 43.3	74.42
1	19 53 46.82	21.123	16 7 18.9	45.73	1	21 31 54.12	19.798	11 12 15.4	74.88
2	19 55 53.47	21.094	16 2 42.3	46.48	2	21 33 52.83	19.773	11 4 44.7	75.34
3	19 57 59.95	21.066	15 58 1.2	47.23	3	21 35 51.40	19.750	10 57 11.3	75.79
4	20 0 6.26	21.037	15 53 15.6	47.96	4	21 37 49.83	19.727	10 49 35.2	76.23
5	20 2 12.39	21.007	15 48 25.7	48.68	5	21 39 48.12	19.703	10 41 56.5	76.67
6	20 4 18.34	20.978	15 43 31.4	49.41	6	21 41 46.27	19.679	10 34 15.2	77.10
7	20 6 24.13	20.950	15 38 32.8	50.13	7	21 43 44.27	19.656	10 26 31.3	77.53
8	20 8 29.74	20.920	15 33 29.9	50.84	8	21 45 42.14	19.633	10 18 44.8	77.95
9	20 10 35.17	20.891	15 28 22.7	51.55	9	21 47 39.87	19.610	10 10 55.9	78.36
10	20 12 40.43	20.863	15 23 11.3	52.25	10	21 49 37.46	19.588	10 3 4.5	78.78
11	20 14 45.52	20.833	15 17 55.7	52.94	11	21 51 34.92	19.566	9 55 10.6	79.18
12	20 16 50.43	20.804	15 12 36.0	53.63	12	21 53 32.25	19.543	9 47 14.4	79.57
13	20 18 55.17	20.775	15 7 12.1	54.32	13	21 55 29.44	19.522	9 39 15.8	79.96
14	20 20 59.73	20.746	15 1 44.2	54.99	14	21 57 26.51	19.501	9 31 14.9	80.33
15	20 23 4.12	20.718	14 56 12.2	55.67	15	21 59 23.45	19.479	9 23 11.8	80.71
16	20 25 8.34	20.689	14 50 36.2	56.33	16	22 1 20.26	19.458	9 15 6.4	81.08
17	20 27 12.39	20.660	14 44 56.3	56.98	17	22 3 16.94	19.437	9 6 58.8	81.45
18	20 29 16.26	20.631	14 39 12.4	57.64	18	22 5 13.50	19.417	8 58 49.0	81.81
19	20 31 19.96	20.603	14 33 24.6	58.29	19	22 7 9.94	19.397	8 50 37.1	82.15
20	20 33 23.49	20.574	14 27 32.9	58.94	20	22 9 6.26	19.377	8 42 23.2	82.50
21	20 35 26.85	20.546	14 21 37.3	59.57	21	22 11 2.46	19.357	8 34 7.1	82.84
22	20 37 30.04	20.518	14 15 38.0	60.19	22	22 12 58.54	19.338	8 25 49.1	83.17
23	20 39 33.06	20.489	14 9 35.0	60.82	23	22 14 54.51	19.318	8 17 29.1	83.50
24	20 41 35.91	20.460	S. 14 3 28.2	61.44	24	22 16 50.36	19.299	S. 8 9 7.1	83.83

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in $10^m$ .	Declination.	Var. in $10^m$ .	Hour.	Right Ascension.	Var. in $10^m$ .	Declination.	Var. in $10^m$ .
<b>TUESDAY 5.</b>					<b>THURSDAY 7.</b>				
	<b>h m s</b>	<b>s</b>				<b>h m s</b>	<b>s</b>		
0	22 16 50.36	19.299	S. 8 9 7.1	83.83	0	23 47 52.59	18.758	S. 1 1 16.4	92.17
1	22 18 46.10	19.281	8 0 43.2	84.14	1	23 49 45.12	18.754	0 52 3.3	92.20
2	22 20 41.73	19.263	7 52 17.4	84.45	2	23 51 37.64	18.753	0 42 50.0	92.23
3	22 22 37.25	19.244	7 43 49.8	84.74	3	23 53 30.15	18.751	0 33 36.6	92.24
4	22 24 32.66	19.227	7 35 20.5	85.04	4	23 55 22.65	18.748	0 24 23.1	92.25
5	22 26 27.97	19.209	7 26 49.3	85.34	5	23 57 15.13	18.746	0 15 9.6	92.25
6	22 28 23.17	19.193	7 18 16.4	85.62	6	23 59 7.60	18.745	S. 0 5 56.1	92.26
7	22 30 18.28	19.176	7 9 41.9	85.89	7	0 1 0.07	18.745	N. 0 3 17.5	92.26
8	22 32 13.28	19.158	7 1 5.7	86.17	8	0 2 52.54	18.744	0 12 31.0	92.25
9	22 34 8.18	19.142	6 52 27.8	86.44	9	0 4 45.00	18.744	0 21 44.5	92.23
10	22 36 2.98	19.126	6 43 48.4	86.69	10	0 6 37.47	18.745	0 30 57.8	92.21
11	22 37 57.69	19.111	6 35 7.5	86.94	11	0 8 29.94	18.745	0 40 11.0	92.18
12	22 39 52.31	19.095	6 26 25.1	87.20	12	0 10 22.41	18.746	0 49 24.0	92.14
13	22 41 46.83	19.079	6 17 41.1	87.44	13	0 12 14.89	18.747	0 58 36.7	92.11
14	22 43 41.26	19.065	6 8 55.8	87.68	14	0 14 7.37	18.748	1 7 49.3	92.07
15	22 45 35.61	19.051	6 0 9.0	87.91	15	0 15 59.87	18.751	1 17 1.5	92.02
16	22 47 29.87	19.037	5 51 20.9	88.13	16	0 17 52.38	18.753	1 26 13.5	91.97
17	22 49 24.05	19.023	5 42 31.5	88.34	17	0 19 44.91	18.757	1 35 25.1	91.90
18	22 51 18.14	19.008	5 33 40.8	88.56	18	0 21 37.46	18.759	1 44 36.3	91.83
19	22 53 12.15	18.996	5 24 48.8	88.77	19	0 23 30.02	18.763	1 53 47.1	91.76
20	22 55 6.09	18.983	5 15 55.6	88.96	20	0 25 22.61	18.767	2 2 57.4	91.68
21	22 56 59.95	18.971	5 7 1.3	89.15	21	0 27 15.22	18.771	2 12 7.2	91.59
22	22 58 53.74	18.958	4 58 5.8	89.35	22	0 29 7.86	18.776	2 21 16.5	91.51
23	23 0 47.45	18.946	S. 4 49 9.1	89.53	23	0 31 0.53	18.781	N. 2 30 25.3	91.42
<b>WEDNESDAY 6.</b>					<b>FRIDAY 8.</b>				
	<b>h m s</b>	<b>s</b>				<b>h m s</b>	<b>s</b>		
0	23 2 41.09	18.934	S. 4 40 11.4	89.70	0	0 32 53.23	18.786	N. 2 39 33.5	91.31
1	23 4 34.66	18.923	4 31 12.7	89.87	1	0 34 45.96	18.792	2 48 41.0	91.20
2	23 6 28.17	18.913	4 22 13.0	90.03	2	0 36 38.73	18.798	2 57 47.9	91.09
3	23 8 21.61	18.903	4 13 12.3	90.20	3	0 38 31.54	18.804	3 6 54.1	90.98
4	23 10 15.00	18.893	4 4 10.6	90.35	4	0 40 24.38	18.811	3 15 59.6	90.86
5	23 12 8.32	18.882	3 55 8.1	90.49	5	0 42 17.27	18.818	3 25 4.4	90.73
6	23 14 1.58	18.872	3 46 4.7	90.64	6	0 44 10.20	18.826	3 34 8.3	90.58
7	23 15 54.78	18.863	3 37 0.4	90.77	7	0 46 3.18	18.834	3 43 11.4	90.45
8	23 17 47.93	18.854	3 27 55.4	90.89	8	0 47 56.21	18.843	3 52 13.7	90.30
9	23 19 41.03	18.845	3 18 49.7	91.02	9	0 49 49.29	18.851	4 1 15.0	90.14
10	23 21 34.07	18.837	3 9 43.2	91.14	10	0 51 42.42	18.859	4 10 15.4	89.99
11	23 23 27.07	18.830	3 0 36.0	91.25	11	0 53 35.60	18.869	4 19 14.9	89.83
12	23 25 20.03	18.822	2 51 28.2	91.36	12	0 55 28.85	18.879	4 28 13.4	89.66
13	23 27 12.94	18.814	2 42 19.7	91.46	13	0 57 22.15	18.889	4 37 10.8	89.48
14	23 29 5.80	18.808	2 33 10.7	91.54	14	0 59 15.52	18.900	4 46 7.2	89.30
15	23 30 58.63	18.801	2 24 1.2	91.63	15	1 1 8.95	18.910	4 55 2.4	89.12
16	23 32 51.41	18.794	2 14 51.1	91.72	16	1 3 2.44	18.922	5 3 56.6	88.93
17	23 34 44.16	18.789	2 5 40.5	91.79	17	1 4 56.01	18.933	5 12 49.5	88.73
18	23 36 36.88	18.783	1 56 29.6	91.86	18	1 6 49.64	18.945	5 21 41.3	88.53
19	23 38 29.56	18.778	1 47 18.2	91.93	19	1 8 43.35	18.958	5 30 31.8	88.32
20	23 40 22.22	18.774	1 38 6.4	91.99	20	1 10 37.13	18.970	5 39 21.1	88.11
21	23 42 14.85	18.769	1 28 54.3	92.04	21	1 12 30.99	18.983	5 48 9.1	87.88
22	23 44 7.45	18.765	1 19 41.9	92.08	22	1 14 24.93	18.997	5 56 55.7	87.65
23	23 46 0.03	18.762	1 10 29.3	92.13	23	1 16 18.95	19.010	6 5 40.9	87.43
24	23 47 52.59	18.758	S. 1 1 16.4	92.17	24	1 18 13.05	19.024	N. 6 14 24.8	87.19

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SATURDAY 9.</b>					<b>MONDAY 11.</b>				
	<b>h m s</b>	<b>s</b>	<b>N. ° ' "</b>	<b>"</b>		<b>h m s</b>	<b>s</b>	<b>N. ° ' "</b>	<b>"</b>
0	1 18 13.05	19.024	N. 6 14 24.8	87.19	0	2 51 48.70	20.097	N. 12 34 38.6	68.98
1	1 20 7.24	19.038	6 23 7.2	86.94	1	2 53 49.37	20.127	12 41 30.9	68.45
2	1 22 1.51	19.053	6 31 48.1	86.70	2	2 55 50.22	20.157	12 48 20.0	67.92
3	1 23 55.88	19.069	6 40 27.6	86.45	3	2 57 51.25	20.187	12 55 5.9	67.38
4	1 25 50.34	19.084	6 49 5.5	86.18	4	2 59 52.46	20.218	13 1 48.6	66.84
5	1 27 44.89	19.100	6 57 41.8	85.92	5	3 1 53.86	20.248	13 8 28.0	66.29
6	1 29 39.54	19.117	7 6 16.5	85.64	6	3 3 55.44	20.278	13 15 4.1	65.73
7	1 31 34.29	19.133	7 14 49.5	85.37	7	3 5 57.20	20.310	13 21 36.8	65.17
8	1 33 29.13	19.149	7 23 20.9	85.09	8	3 7 59.16	20.342	13 28 6.1	64.60
9	1 35 24.08	19.168	7 31 50.6	84.80	9	3 10 1.30	20.373	13 34 32.0	64.03
10	1 37 19.14	19.185	7 40 18.5	84.50	10	3 12 3.64	20.406	13 40 54.4	63.44
11	1 39 14.30	19.203	7 48 44.6	84.20	11	3 14 6.17	20.438	13 47 13.3	62.86
12	1 41 9.57	19.222	7 57 8.9	83.90	12	3 16 8.89	20.469	13 53 28.7	62.27
13	1 43 4.96	19.240	8 5 31.4	83.59	13	3 18 11.80	20.502	13 59 40.5	61.67
14	1 45 0.45	19.258	8 13 52.0	83.27	14	3 20 14.91	20.535	14 5 48.7	61.06
15	1 46 56.06	19.278	8 22 10.6	82.94	15	3 22 18.22	20.568	14 11 53.2	60.45
16	1 48 51.79	19.298	8 30 27.3	82.63	16	3 24 21.72	20.601	14 17 54.1	59.83
17	1 50 47.64	19.318	8 38 42.1	82.29	17	3 26 25.43	20.635	14 23 51.2	59.20
18	1 52 43.61	19.338	8 46 54.8	81.94	18	3 28 29.34	20.668	14 29 44.5	58.57
19	1 54 39.70	19.359	8 55 5.4	81.59	19	3 30 33.44	20.701	14 35 34.0	57.93
20	1 56 35.92	19.380	9 3 13.9	81.24	20	3 32 37.75	20.735	14 41 19.7	57.29
21	1 58 32.26	19.402	9 11 20.3	80.89	21	3 34 42.26	20.769	14 47 1.5	56.64
22	2 0 28.74	19.423	9 19 24.6	80.53	22	3 36 46.98	20.803	14 52 39.4	55.98
23	2 2 25.34	19.445	N. 9 27 26.6	80.15	23	3 38 51.90	20.838	N. 14 58 13.3	55.32
<b>SUNDAY 10.</b>					<b>TUESDAY 12.</b>				
	<b>h m s</b>	<b>s</b>	<b>N. ° ' "</b>	<b>"</b>		<b>h m s</b>	<b>s</b>	<b>N. ° ' "</b>	<b>"</b>
0	2 4 22.08	19.468	N. 9 35 26.4	79.78	0	3 40 57.03	20.873	N. 15 3 43.2	54.65
1	2 6 18.96	19.491	9 43 23.9	79.39	1	3 43 2.37	20.908	15 9 9.1	53.98
2	2 8 15.97	19.513	9 51 19.1	79.01	2	3 45 7.92	20.942	15 14 30.9	53.30
3	2 10 13.12	19.537	9 59 12.0	78.62	3	3 47 13.67	20.976	15 19 48.7	52.61
4	2 12 10.41	19.561	10 7 2.5	78.22	4	3 49 19.63	21.012	15 25 2.2	51.91
5	2 14 7.85	19.585	10 14 50.6	77.82	5	3 51 25.81	21.047	15 30 11.6	51.22
6	2 16 5.43	19.608	10 22 36.3	77.40	6	3 53 32.19	21.082	15 35 16.8	50.51
7	2 18 3.15	19.633	10 30 19.4	76.98	7	3 55 38.79	21.118	15 40 17.7	49.79
8	2 20 1.03	19.658	10 38 0.1	76.57	8	3 57 45.60	21.153	15 45 14.3	49.08
9	2 21 59.05	19.683	10 45 38.2	76.13	9	3 59 52.63	21.189	15 50 6.6	48.35
10	2 23 57.23	19.709	10 53 13.7	75.70	10	4 1 59.87	21.224	15 54 54.5	47.62
11	2 25 55.56	19.735	11 0 46.6	75.26	11	4 4 7.32	21.259	15 59 38.0	46.88
12	2 27 54.05	19.762	11 8 16.8	74.81	12	4 6 14.98	21.296	16 4 17.0	46.13
13	2 29 52.70	19.788	11 15 44.3	74.36	13	4 8 22.87	21.333	16 8 51.6	45.38
14	2 31 51.50	19.814	11 23 9.1	73.90	14	4 10 30.97	21.368	16 13 21.6	44.63
15	2 33 50.47	19.842	11 30 31.1	73.43	15	4 12 39.28	21.403	16 17 47.1	43.87
16	2 35 49.60	19.868	11 37 50.3	72.97	16	4 14 47.81	21.440	16 22 8.0	43.09
17	2 37 48.89	19.896	11 45 6.7	72.48	17	4 16 56.56	21.477	16 26 24.2	42.32
18	2 39 48.35	19.924	11 52 20.1	72.00	18	4 19 5.53	21.513	16 30 35.8	41.53
19	2 41 47.98	19.953	11 59 30.7	71.52	19	4 21 14.71	21.548	16 34 42.6	40.74
20	2 43 47.78	19.981	12 6 38.3	71.03	20	4 23 24.11	21.585	16 38 44.7	39.95
21	2 45 47.75	20.009	12 13 43.0	70.53	21	4 25 33.73	21.622	16 42 42.0	39.15
22	2 47 47.89	20.038	12 20 44.6	70.01	22	4 27 43.57	21.658	16 46 34.5	38.34
23	2 49 48.21	20.068	12 27 43.1	69.50	23	4 29 53.62	21.693	16 50 22.1	37.53
24	2 51 48.70	20.097	N. 12 34 38.6	68.98	24	4 32 3.89	21.730	N. 16 54 4.8	36.71

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
WEDNESDAY 13.					FRIDAY 15.				
	h m s	s	N. 16° 54' 4.8"	36.71		h m s	s	N. 18° 5' 2.7"	9.10
0	4 32 3.89	21.730	16 54 4.8	36.71	0	6 20 22.50	23.330	18 5 2.7	9.10
1	4 34 14.38	21.767	16 57 42.6	35.89	1	6 22 42.56	23.358	18 4 4.9	10.16
2	4 36 25.09	21.803	17 1 15.5	35.06	2	6 25 2.79	23.385	18 3 0.8	11.23
3	4 38 36.01	21.838	17 4 43.3	34.21	3	6 27 23.18	23.412	18 1 50.2	12.31
4	4 40 47.15	21.875	17 8 6.0	33.37	4	6 29 43.73	23.438	18 0 33.1	13.38
5	4 42 58.51	21.911	17 11 23.7	32.53	5	6 32 4.43	23.463	17 59 9.6	14.45
6	4 45 10.08	21.948	17 14 36.3	31.67	6	6 34 25.29	23.490	17 57 39.7	15.53
7	4 47 21.88	21.983	17 17 43.7	30.81	7	6 36 46.31	23.515	17 56 3.2	16.62
8	4 49 33.88	22.019	17 20 46.0	29.94	8	6 39 7.47	23.540	17 54 20.3	17.70
9	4 51 46.11	22.056	17 23 43.0	29.06	9	6 41 28.79	23.565	17 52 30.8	18.79
10	4 53 58.55	22.091	17 26 34.7	28.18	10	6 43 50.25	23.589	17 50 34.8	19.88
11	4 56 11.20	22.127	17 29 21.2	27.30	11	6 46 11.86	23.613	17 48 32.3	20.96
12	4 58 24.07	22.163	17 32 2.3	26.41	12	6 48 33.61	23.637	17 46 23.3	22.05
13	5 0 37.15	22.198	17 34 38.1	25.52	13	6 50 55.50	23.659	17 44 7.7	23.15
14	5 2 50.45	22.234	17 37 8.5	24.61	14	6 53 17.52	23.683	17 41 45.5	24.25
15	5 5 3.96	22.269	17 39 33.4	23.70	15	6 55 39.69	23.705	17 39 16.7	25.35
16	5 7 17.68	22.305	17 41 52.9	22.78	16	6 58 1.98	23.727	17 36 41.3	26.45
17	5 9 31.62	22.340	17 44 6.8	21.87	17	7 0 24.41	23.748	17 33 59.3	27.54
18	5 11 45.76	22.374	17 46 15.3	20.94	18	7 2 46.96	23.769	17 31 10.8	28.64
19	5 14 0.11	22.410	17 48 18.1	20.01	19	7 5 9.64	23.791	17 28 15.6	29.75
20	5 16 14.68	22.445	17 50 15.4	19.08	20	7 7 32.45	23.811	17 25 13.8	30.85
21	5 18 29.45	22.479	17 52 7.1	18.13	21	7 9 55.37	23.831	17 22 5.4	31.95
22	5 20 44.43	22.513	17 53 53.0	17.18	22	7 12 18.42	23.851	17 18 50.4	33.06
23	5 22 59.61	22.548	N. 17 55 33.3	16.24	23	7 14 41.58	23.870	N. 17 15 28.7	34.17
THURSDAY 14.					SATURDAY 16.				
	h m s	s	N. 17° 57' 7.9"	15.28		h m s	s	N. 17° 12' 0.4"	35.27
0	5 25 15.01	22.583	17 57 7.9	15.28	0	7 17 4.86	23.888	17 12 0.4	35.27
1	5 27 30.60	22.616	17 58 36.7	14.31	1	7 19 28.24	23.907	17 8 25.5	36.38
2	5 29 46.40	22.650	17 59 59.6	13.34	2	7 21 51.74	23.925	17 4 43.9	37.48
3	5 32 2.40	22.683	18 1 16.8	12.38	3	7 24 15.34	23.943	17 0 55.8	38.58
4	5 34 18.60	22.717	18 2 28.1	11.40	4	7 26 39.05	23.960	16 57 1.0	39.69
5	5 36 35.00	22.749	18 3 33.6	10.42	5	7 29 2.86	23.976	16 52 59.5	40.79
6	5 38 51.59	22.783	18 4 33.1	9.43	6	7 31 26.76	23.993	16 48 51.5	41.89
7	5 41 8.39	22.816	18 5 26.7	8.43	7	7 33 50.77	24.009	16 44 36.8	42.99
8	5 43 25.38	22.848	18 6 14.3	7.43	8	7 36 14.87	24.023	16 40 15.6	44.09
9	5 45 42.56	22.880	18 6 55.9	6.43	9	7 38 39.05	24.038	16 35 47.7	45.19
10	5 47 59.94	22.912	18 7 31.5	5.43	10	7 41 3.33	24.054	16 31 13.3	46.28
11	5 50 17.50	22.943	18 8 1.1	4.42	11	7 43 27.70	24.068	16 26 32.3	47.38
12	5 52 35.26	22.975	18 8 24.5	3.40	12	7 45 52.15	24.082	16 21 44.7	48.48
13	5 54 53.20	23.006	18 8 41.9	2.38	13	7 48 16.68	24.095	16 16 50.5	49.58
14	5 57 11.33	23.038	18 8 53.1	1.36	14	7 50 41.29	24.108	16 11 49.8	50.66
15	5 59 29.65	23.068	18 8 58.2	0.33	15	7 53 5.98	24.122	16 6 42.6	51.75
16	6 1 48.15	23.098	18 8 57.0	0.71	16	7 55 30.75	24.133	16 1 28.8	52.84
17	6 4 6.83	23.128	18 8 49.7	1.73	17	7 57 55.58	24.145	15 56 8.5	53.92
18	6 6 25.68	23.158	18 8 36.2	2.78	18	8 0 20.49	24.157	15 50 41.8	55.00
19	6 8 44.72	23.188	18 8 16.4	3.83	19	8 2 45.47	24.168	15 45 8.5	56.08
20	6 11 3.93	23.217	18 7 50.3	4.88	20	8 5 10.51	24.178	15 39 28.8	57.15
21	6 13 23.32	23.246	18 7 17.9	5.93	21	8 7 35.61	24.188	15 33 42.7	58.22
22	6 15 42.88	23.273	18 6 39.2	6.98	22	8 10 0.77	24.198	15 27 50.2	59.28
23	6 18 2.60	23.302	18 5 54.1	8.04	23	8 12 25.99	24.208	15 21 51.3	60.35
24	6 20 22.50	23.330	N. 18 5 2.7	9.10	24	8 14 51.27	24.218	N. 15 15 46.0	61.41

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascens.on.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 17.</b>					<b>TUESDAY 19.</b>				
	<b>h m s</b>	<b>s</b>				<b>h m s</b>	<b>s</b>		
0	8 14 51.27	24.218	N. 15° 15' 46".0	61.41	0	10 11 33.61	24.317	N. 8° 30' 52".8	104.02
1	8 17 16.60	24.227	15 9 34.4	62.46	1	10 13 59.50	24.314	8 20 26.7	104.67
2	8 19 41.99	24.235	15 3 16.5	63.52	2	10 16 25.38	24.312	8 9 56.8	105.30
3	8 22 7.42	24.243	14 56 52.2	64.57	3	10 18 51.24	24.309	7 59 23.1	105.92
4	8 24 32.90	24.251	14 50 21.7	65.60	4	10 21 17.09	24.307	7 48 45.8	106.52
5	8 26 58.43	24.258	14 43 45.0	66.64	5	10 23 42.92	24.303	7 38 4.9	107.11
6	8 29 24.00	24.265	14 37 2.0	67.68	6	10 26 8.73	24.301	7 27 20.5	107.69
7	8 31 49.61	24.272	14 30 12.9	68.70	7	10 28 34.53	24.298	7 16 32.6	108.26
8	8 34 15.26	24.278	14 23 17.6	69.72	8	10 31 0.30	24.294	7 5 41.4	108.81
9	8 36 40.95	24.284	14 16 16.2	70.73	9	10 33 26.06	24.292	6 54 46.9	109.34
10	8 39 6.67	24.289	14 9 8.8	71.74	10	10 35 51.80	24.289	6 43 49.3	109.87
11	8 41 32.42	24.295	14 1 55.3	72.75	11	10 38 17.53	24.286	6 32 48.5	110.38
12	8 43 58.21	24.300	13 54 35.8	73.74	12	10 40 43.23	24.282	6 21 44.7	110.88
13	8 46 24.02	24.304	13 47 10.4	74.73	13	10 43 8.91	24.279	6 10 37.9	111.37
14	8 48 49.86	24.309	13 39 39.0	75.73	14	10 45 34.58	24.276	5 59 28.3	111.83
15	8 51 15.73	24.313	13 32 1.7	76.71	15	10 48 0.22	24.273	5 48 16.0	112.28
16	8 53 41.62	24.318	13 24 18.5	77.68	16	10 50 25.85	24.270	5 37 0.9	112.73
17	8 56 7.54	24.321	13 16 29.6	78.63	17	10 52 51.46	24.267	5 25 43.3	113.15
18	8 58 33.47	24.323	13 8 34.9	79.59	18	10 55 17.05	24.263	5 14 23.1	113.57
19	9 0 59.42	24.327	13 0 34.5	80.54	19	10 57 42.62	24.261	5 3 0.5	113.96
20	9 3 25.39	24.329	12 52 28.4	81.48	20	11 0 8.18	24.257	4 51 35.6	114.34
21	9 5 51.37	24.331	12 44 16.7	82.42	21	11 2 33.71	24.253	4 40 8.4	114.71
22	9 8 17.36	24.333	12 35 59.4	83.34	22	11 4 59.22	24.251	4 28 39.1	115.06
23	9 10 43.37	24.336	N. 12° 27' 36".6	84.26	23	11 7 24.72	24.248	N. 4 17 7.7	115.40
<b>MONDAY 18.</b>					<b>WEDNESDAY 20.</b>				
0	9 13 9.39	24.337	N. 12° 19' 8".3	85.18	0	11 9 50.20	24.245	N. 4 5 34.3	115.73
1	9 15 35.41	24.338	12 10 34.5	86.08	1	11 12 15.66	24.242	3 53 59.0	116.03
2	9 18 1.44	24.339	12 1 55.4	86.96	2	11 14 41.10	24.239	3 42 21.9	116.33
3	9 20 27.48	24.341	11 53 11.0	87.84	3	11 17 6.53	24.237	3 30 43.1	116.60
4	9 22 53.53	24.341	11 44 21.3	88.72	4	11 19 31.94	24.233	3 19 2.7	116.87
5	9 25 19.57	24.341	11 35 26.3	89.59	5	11 21 57.33	24.230	3 7 20.7	117.12
6	9 27 45.62	24.342	11 26 26.2	90.44	6	11 24 22.70	24.228	2 55 37.3	117.34
7	9 30 11.67	24.342	11 17 21.0	91.28	7	11 26 48.06	24.226	2 43 52.6	117.56
8	9 32 37.72	24.342	11 8 10.8	92.12	8	11 29 13.41	24.223	2 32 6.6	117.76
9	9 35 3.77	24.342	10 58 55.6	92.94	9	11 31 38.74	24.220	2 20 19.5	117.94
10	9 37 29.82	24.341	10 49 35.5	93.76	10	11 34 4.05	24.218	2 8 31.3	118.12
11	9 39 55.86	24.339	10 40 10.5	94.57	11	11 36 29.35	24.216	1 56 42.1	118.28
12	9 42 21.89	24.338	10 30 40.7	95.37	12	11 38 54.64	24.213	1 44 52.0	118.41
13	9 44 47.92	24.338	10 21 6.1	96.15	13	11 41 19.91	24.210	1 33 1.2	118.53
14	9 47 13.94	24.337	10 11 26.9	96.92	14	11 43 45.16	24.208	1 21 9.7	118.63
15	9 49 39.96	24.336	10 1 43.1	97.68	15	11 46 10.41	24.207	1 9 17.6	118.73
16	9 52 5.97	24.333	9 51 54.7	98.43	16	11 48 35.64	24.204	0 57 25.0	118.80
17	9 54 31.96	24.332	9 42 1.9	99.17	17	11 51 0.86	24.202	0 45 32.0	118.86
18	9 56 57.95	24.330	9 32 4.7	99.90	18	11 53 26.06	24.200	0 33 38.7	118.90
19	9 59 23.92	24.328	9 22 3.1	100.62	19	11 55 51.26	24.198	0 21 45.2	118.93
20	10 1 49.89	24.327	9 11 57.3	101.32	20	11 58 16.44	24.197	N. 0 9 51.6	118.94
21	10 4 15.84	24.323	9 1 47.3	102.02	21	12 0 41.62	24.195	S. 0 2 2.1	118.94
22	10 6 41.77	24.322	8 51 33.1	102.70	22	12 3 6.78	24.193	0 13 55.7	118.92
23	10 9 7.70	24.320	8 41 14.9	103.36	23	12 5 31.94	24.192	0 25 49.1	118.88
24	10 11 33.61	24.317	N. 8° 30' 52".8	104.02	24	12 7 57.08	24.190	S. 0 37 42.3	118.84



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 21.</b>					<b> SATURDAY 23.</b>				
	h m s	s				h m s	s		
0	12 7 57.08	24.190	S. 0 37 42.3	118.84	0	14 4 0.56	24.175	S. 9 33 44.4	99.13
1	12 10 22.22	24.189	0 49 35.2	118.78	1	14 6 25.61	24.174	9 43 36.9	98.39
2	12 12 47.35	24.188	1 1 27.6	118.69	2	14 8 50.65	24.173	9 53 25.1	97.66
3	12 15 12.48	24.187	1 13 19.5	118.59	3	14 11 15.69	24.173	10 3 8.8	96.90
4	12 17 37.59	24.185	1 25 10.7	118.48	4	14 13 40.72	24.172	10 12 47.9	96.13
5	12 20 2.70	24.183	1 37 1.2	118.35	5	14 16 5.75	24.171	10 22 22.4	95.36
6	12 22 27.80	24.183	1 48 50.9	118.21	6	14 18 30.77	24.169	10 31 52.2	94.58
7	12 24 52.90	24.183	2 0 39.7	118.05	7	14 20 55.78	24.168	10 41 17.3	93.78
8	12 27 17.99	24.182	2 12 27.5	117.88	8	14 23 20.78	24.166	10 50 37.6	92.98
9	12 29 43.08	24.181	2 24 14.2	117.68	9	14 25 45.77	24.164	10 59 53.1	92.17
10	12 32 8.16	24.180	2 35 59.7	117.48	10	14 28 10.75	24.163	11 9 3.6	91.34
11	12 34 33.24	24.180	2 47 44.0	117.26	11	14 30 35.72	24.161	11 18 9.2	90.52
12	12 36 58.32	24.179	2 59 26.8	117.02	12	14 33 0.68	24.159	11 27 9.8	89.67
13	12 39 23.39	24.178	3 11 8.2	116.78	13	14 35 25.63	24.157	11 36 5.2	88.82
14	12 41 48.46	24.178	3 22 48.1	116.51	14	14 37 50.56	24.153	11 44 55.6	87.96
15	12 44 13.52	24.178	3 34 26.3	116.22	15	14 40 15.47	24.151	11 53 40.7	87.08
16	12 46 38.59	24.178	3 46 2.7	115.93	16	14 42 40.37	24.148	12 2 20.6	86.21
17	12 49 3.65	24.177	3 57 37.4	115.62	17	14 45 5.25	24.145	12 10 55.2	85.33
18	12 51 28.71	24.177	4 9 10.1	115.28	18	14 47 30.11	24.143	12 19 24.5	84.43
19	12 53 53.77	24.177	4 20 40.8	114.94	19	14 49 54.96	24.139	12 27 48.4	83.53
20	12 56 18.83	24.177	4 32 9.4	114.59	20	14 52 19.78	24.134	12 36 6.9	82.63
21	12 58 43.89	24.177	4 43 35.9	114.23	21	14 54 44.57	24.131	12 44 19.9	81.71
22	13 1 8.95	24.176	4 55 0.1	113.84	22	14 57 9.35	24.128	12 52 27.4	80.78
23	13 3 34.00	24.176	S. 5 6 22.0	113.44	23	14 59 34.10	24.123	S. 13 0 29.3	79.85
<b>FRIDAY 22.</b>					<b>SUNDAY 24.</b>				
0	13 5 59.06	24.177	S. 5 17 41.4	113.03	0	15 1 58.82	24.118	S. 13 8 25.6	78.91
1	13 8 24.12	24.177	5 28 58.3	112.60	1	15 4 23.51	24.113	13 16 16.2	77.96
2	13 10 49.18	24.177	5 40 12.6	112.16	2	15 6 48.18	24.109	13 24 1.1	77.01
3	13 13 14.24	24.177	5 51 24.2	111.70	3	15 9 12.82	24.103	13 31 40.3	76.06
4	13 15 39.30	24.177	6 2 33.0	111.23	4	15 11 37.42	24.098	13 39 13.8	75.09
5	13 18 4.36	24.177	6 13 38.9	110.74	5	15 14 1.99	24.092	13 46 41.4	74.11
6	13 20 29.42	24.177	6 24 41.9	110.25	6	15 16 26.52	24.086	13 54 3.1	73.13
7	13 22 54.48	24.178	6 35 41.9	109.74	7	15 18 51.02	24.080	14 1 19.0	72.16
8	13 25 19.55	24.178	6 46 38.8	109.22	8	15 21 15.48	24.073	14 8 29.0	71.17
9	13 27 44.61	24.178	6 57 32.5	108.68	9	15 23 39.90	24.067	14 15 33.0	70.17
10	13 30 9.68	24.178	7 8 23.0	108.13	10	15 26 4.28	24.059	14 22 31.0	69.17
11	13 32 34.74	24.178	7 19 10.1	107.57	11	15 28 28.61	24.052	14 29 23.0	68.16
12	13 34 59.81	24.178	7 29 53.8	106.99	12	15 30 52.90	24.044	14 36 8.9	67.15
13	13 37 24.88	24.178	7 40 34.0	106.40	13	15 33 17.14	24.036	14 42 48.8	66.14
14	13 39 49.94	24.178	7 51 10.6	105.80	14	15 35 41.33	24.028	14 49 22.6	65.12
15	13 42 15.01	24.178	8 1 43.6	105.19	15	15 38 5.47	24.019	14 55 50.2	64.08
16	13 44 40.08	24.178	8 12 12.9	104.56	16	15 40 29.56	24.010	15 2 11.6	63.06
17	13 47 5.15	24.178	8 22 38.3	103.92	17	15 42 53.59	24.000	15 8 26.9	62.03
18	13 49 30.21	24.177	8 32 59.9	103.28	18	15 45 17.56	23.991	15 14 36.0	60.99
19	13 51 55.27	24.178	8 43 17.6	102.62	19	15 47 41.48	23.982	15 20 38.8	59.94
20	13 54 20.34	24.178	8 53 31.3	101.93	20	15 50 5.34	23.972	15 26 35.3	58.90
21	13 56 45.40	24.176	9 3 40.8	101.24	21	15 52 29.14	23.961	15 32 25.6	57.86
22	13 59 10.45	24.176	9 13 46.2	100.55	22	15 54 52.87	23.950	15 38 9.6	56.81
23	14 1 35.51	24.176	9 23 47.4	99.85	23	15 57 16.54	23.939	15 43 47.3	55.75
24	14 4 0.56	24.175	S. 9 33 44.4	99.13	24	15 59 40.14	23.927	S. 15 49 18.6	54.69

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 25.</b>					<b>WEDNESDAY 27.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	15 59 40.14	23.927	S. 15 49 18.6	54.69	0	17 52 31.52	22.964	S. 18 8 9.5	3.45
1	16 2 3.66	23.915	15 54 43.6	53.63	1	17 54 49.22	22.935	18 8 27.1	2.43
2	16 4 27.12	23.903	16 0 2.2	52.57	2	17 57 6.74	22.907	18 8 38.6	1.41
3	16 6 50.50	23.891	16 5 14.4	51.50	3	17 59 24.10	22.879	18 8 44.0	0.40
4	16 9 13.81	23.878	16 10 20.2	50.43	4	18 1 41.29	22.850	18 8 43.4	0.61
5	16 11 37.03	23.864	16 15 19.6	49.37	5	18 3 58.30	22.821	18 8 36.7	1.63
6	16 14 0.18	23.851	16 20 12.6	48.30	6	18 6 15.14	22.792	18 8 23.9	2.63
7	16 16 23.24	23.837	16 24 59.2	47.23	7	18 8 31.80	22.762	18 8 5.1	3.63
8	16 18 46.22	23.823	16 29 39.3	46.14	8	18 10 48.28	22.732	18 7 40.3	4.63
9	16 21 9.12	23.808	16 34 12.9	45.07	9	18 13 4.58	22.702	18 7 9.6	5.62
10	16 23 31.92	23.793	16 38 40.1	43.99	10	18 15 20.70	22.672	18 6 32.9	6.61
11	16 25 54.63	23.778	16 43 0.8	42.92	11	18 17 36.64	22.642	18 5 50.3	7.59
12	16 28 17.25	23.763	16 47 15.1	41.83	12	18 19 52.40	22.611	18 5 1.8	8.58
13	16 30 39.78	23.746	16 51 22.8	40.75	13	18 22 7.97	22.579	18 4 7.4	9.55
14	16 33 2.20	23.729	16 55 24.1	39.67	14	18 24 23.35	22.548	18 3 7.2	10.52
15	16 35 24.53	23.713	16 59 18.9	38.58	15	18 26 38.54	22.517	18 2 1.2	11.48
16	16 37 46.75	23.695	17 3 7.1	37.50	16	18 28 53.55	22.486	18 0 49.5	12.44
17	16 40 8.87	23.678	17 6 48.9	36.43	17	18 31 8.37	22.454	17 59 31.9	13.40
18	16 42 30.89	23.660	17 10 24.2	35.34	18	18 33 23.00	22.422	17 58 8.7	14.35
19	16 44 52.79	23.642	17 13 53.0	34.26	19	18 35 37.43	22.389	17 56 39.7	15.30
20	16 47 14.59	23.623	17 17 15.3	33.18	20	18 37 51.67	22.358	17 55 5.1	16.23
21	16 49 36.27	23.604	17 20 31.1	32.09	21	18 40 5.72	22.325	17 53 24.9	17.18
22	16 51 57.84	23.585	17 23 40.4	31.02	22	18 42 19.57	22.293	17 51 39.0	18.11
23	16 54 19.29	23.565	S. 17 26 43.3	29.93	23	18 44 33.23	22.260	S. 17 49 47.6	19.03
<b>TUESDAY 26.</b>					<b>THURSDAY 28.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	16 56 40.62	23.545	S. 17 29 39.6	28.84	0	18 46 46.69	22.227	S. 17 47 50.6	19.96
1	16 59 1.83	23.525	17 32 29.4	27.77	1	18 48 59.95	22.194	17 45 48.1	20.87
2	17 1 22.92	23.504	17 35 12.8	26.69	2	18 51 13.02	22.161	17 43 40.2	21.78
3	17 3 43.88	23.483	17 37 49.7	25.62	3	18 53 25.88	22.128	17 41 26.7	22.69
4	17 6 4.72	23.462	17 40 20.2	24.54	4	18 55 38.55	22.094	17 39 7.9	23.58
5	17 8 25.42	23.440	17 42 44.2	23.46	5	18 57 51.01	22.061	17 36 43.7	24.48
6	17 10 46.00	23.418	17 45 1.7	22.38	6	19 0 3.28	22.028	17 34 14.1	25.38
7	17 13 6.44	23.395	17 47 12.8	21.32	7	19 2 15.34	21.993	17 31 39.2	26.26
8	17 15 26.74	23.372	17 49 17.5	20.25	8	19 4 27.20	21.960	17 28 59.0	27.14
9	17 17 46.90	23.349	17 51 15.8	19.18	9	19 6 38.86	21.926	17 26 13.5	28.01
10	17 20 6.93	23.326	17 53 7.7	18.11	10	19 8 50.31	21.892	17 23 22.9	28.88
11	17 22 26.81	23.302	17 54 53.1	17.04	11	19 11 1.56	21.858	17 20 27.0	29.74
12	17 24 46.55	23.278	17 56 32.2	15.98	12	19 13 12.61	21.824	17 17 26.0	30.60
13	17 27 6.15	23.253	17 58 4.9	14.93	13	19 15 23.45	21.790	17 14 19.8	31.45
14	17 29 25.59	23.228	17 59 31.3	13.88	14	19 17 34.09	21.757	17 11 8.6	32.29
15	17 31 44.89	23.204	18 0 51.4	12.82	15	19 19 44.53	21.723	17 7 52.3	33.13
16	17 34 4.04	23.178	18 2 5.1	11.76	16	19 21 54.76	21.688	17 4 31.0	33.97
17	17 36 23.03	23.152	18 3 12.5	10.72	17	19 24 4.78	21.653	17 1 4.7	34.80
18	17 38 41.86	23.126	18 4 13.7	9.67	18	19 26 14.60	21.620	16 57 33.4	35.62
19	17 41 0.54	23.100	18 5 8.5	8.62	19	19 28 24.22	21.586	16 53 57.3	36.43
20	17 43 19.06	23.073	18 5 57.1	7.58	20	19 30 33.63	21.551	16 50 16.2	37.25
21	17 45 37.42	23.047	18 6 39.5	6.55	21	19 32 42.83	21.517	16 46 30.3	38.05
22	17 47 55.62	23.019	18 7 15.7	5.52	22	19 34 51.83	21.483	16 42 39.6	38.85
23	17 50 13.65	22.992	18 7 45.7	4.48	23	19 37 0.62	21.448	16 38 44.1	39.64
24	17 52 31.52	22.964	S. 18 8 9.5	3.45	24	19 39 9.20	21.413	S. 16 34 43.9	40.43

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
FRIDAY 29.					SATURDAY 30.				
	h m s	s				h m s	s		
0	19 39 9.20	21.413	S. 16 34 43.9	40.43	0	20 29 34.49	20.613	S. 14 36 28.5	57.54
1	19 41 17.58	21.379	16 30 38.9	41.22	1	20 31 38.07	20.582	14 30 41.3	58.18
2	19 43 25.75	21.345	16 26 29.3	41.98	2	20 33 41.47	20.550	14 24 50.4	58.80
3	19 45 33.72	21.312	16 22 15.1	42.76	3	20 35 44.67	20.518	14 18 55.7	59.43
4	19 47 41.49	21.278	16 17 56.2	43.53	4	20 37 47.69	20.488	14 12 57.2	60.05
5	19 49 49.05	21.243	16 13 32.8	44.28	5	20 39 50.52	20.456	14 6 55.1	60.66
6	19 51 56.41	21.209	16 9 4.8	45.03	6	20 41 53.16	20.425	14 0 49.3	61.27
7	19 54 3.56	21.175	16 4 32.4	45.78	7	20 43 55.62	20.395	13 54 39.9	61.87
8	19 56 10.51	21.141	15 59 55.5	46.52	8	20 45 57.90	20.364	13 48 26.9	62.47
9	19 58 17.25	21.107	15 55 14.2	47.25	9	20 47 59.99	20.333	13 42 10.3	63.05
10	20 0 23.79	21.073	15 50 28.5	47.98	10	20 50 1.89	20.303	13 35 50.3	63.63
11	20 2 30.13	21.040	15 45 38.4	48.71	11	20 52 3.62	20.273	13 29 26.7	64.21
12	20 4 36.27	21.007	15 40 44.0	49.42	12	20 54 5.17	20.243	13 22 59.8	64.78
13	20 6 42.21	20.973	15 35 45.4	50.13	13	20 56 6.54	20.213	13 16 29.4	65.35
14	20 8 47.95	20.940	15 30 42.5	50.83	14	20 58 7.73	20.184	13 9 55.6	65.90
15	20 10 53.49	20.907	15 25 35.4	51.53	15	21 0 8.75	20.155	13 3 18.6	66.45
16	20 12 58.83	20.873	15 20 24.2	52.22	16	21 2 9.59	20.126	12 56 38.2	67.00
17	20 15 3.97	20.841	15 15 8.8	52.91	17	21 4 10.26	20.098	12 49 54.6	67.54
18	20 17 8.92	20.808	15 9 49.3	53.58	18	21 6 10.76	20.069	12 43 7.7	68.08
19	20 19 13.67	20.775	15 4 25.8	54.26	19	21 8 11.09	20.041	12 36 17.7	68.60
20	20 21 18.22	20.743	14 58 58.2	54.93	20	21 10 11.25	20.013	12 29 24.5	69.13
21	20 23 22.58	20.710	14 53 26.7	55.58	21	21 12 11.24	19.985	12 22 28.2	69.64
22	20 25 26.74	20.678	14 47 51.2	56.24	22	21 14 11.07	19.958	12 15 28.8	70.15
23	20 27 30.71	20.646	14 42 11.8	56.89	23	21 16 10.74	19.931	12 8 26.4	70.66
24	20 29 34.49	20.613	S. 14 36 28.5	57.54	24	21 18 10.24	19.903	S. 12 1 20.9	71.16

PHASES OF THE MOON.

				h m	
Sept.	5	○ Full Moon	- - - - -	19	47.2
	13	☾ Last Quarter	- - - - -	22	20.0
	20	● New Moon	- - - - -	16	38.3
	27	☽ First Quarter	- - - - -	10	40.4
				h	
Sept.	7	☾ Apogee	- - - - -	6.2	
	20	☾ Perigee	- - - - -	17.6	

## AT APPARENT NOON.

Date.	THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Var. in hour.
	Apparent Right Ascension.	Var. in hour.	Apparent Declination.	Var. in hour.			
	h m s	s	° ' "	"	m s	m s	s
Sun.	1 12 27 35.60	9.046	S. 2 58 54.6	58.26	1 4.27	10 7.02	0.809
Mon.	2 12 31 12.83	9.057	3 22 12.0	58.18	1 4.32	10 26.29	0.797
Tues.	3 12 34 50.35	9.070	3 45 27.1	58.08	1 4.36	10 45.27	0.784
Wed.	4 12 38 28.18	9.083	4 8 39.6	57.96	1 4.41	11 3.94	0.771
Thur.	5 12 42 6.34	9.098	4 31 49.2	57.83	1 4.46	11 22.28	0.757
Frid.	6 12 45 44.87	9.113	4 54 55.4	57.68	1 4.52	11 40.26	0.741
Sat.	7 12 49 23.77	9.129	5 17 58.0	57.52	1 4.57	11 57.86	0.725
Sun.	8 12 53 3.08	9.147	5 40 56.6	57.35	1 4.63	12 15.06	0.708
Mon.	9 12 56 42.81	9.165	6 3 50.9	57.16	1 4.70	12 31.83	0.690
Tues.	10 13 0 22.99	9.184	6 26 40.4	56.96	1 4.76	12 48.16	0.670
Wed.	11 13 4 3.65	9.204	6 49 24.9	56.74	1 4.83	13 4.01	0.650
Thur.	12 13 7 44.80	9.225	7 12 3.9	56.51	1 4.90	13 19.37	0.629
Frid.	13 13 11 26.46	9.247	7 34 37.2	56.26	1 4.98	13 34.22	0.608
Sat.	14 13 15 8.65	9.270	7 57 4.3	55.99	1 5.05	13 48.54	0.585
Sun.	15 13 18 51.40	9.293	8 19 24.9	55.71	1 5.13	14 2.31	0.562
Mon.	16 13 22 34.72	9.317	8 41 38.5	55.42	1 5.21	14 15.51	0.538
Tues.	17 13 26 18.63	9.342	9 3 44.9	55.10	1 5.30	14 28.12	0.513
Wed.	18 13 30 3.13	9.367	9 25 43.5	54.78	1 5.38	14 40.13	0.488
Thur.	19 13 33 48.25	9.393	9 47 34.1	54.43	1 5.47	14 51.53	0.462
Frid.	20 13 37 34.00	9.420	10 9 16.1	54.06	1 5.56	15 2.31	0.436
Sat.	21 13 41 20.39	9.446	10 30 49.2	53.69	1 5.66	15 12.45	0.409
Sun.	22 13 45 7.42	9.473	10 52 13.0	53.29	1 5.75	15 21.94	0.382
Mon.	23 13 48 55.11	9.501	11 13 27.0	52.87	1 5.85	15 30.77	0.354
Tues.	24 13 52 43.48	9.530	11 34 30.9	52.44	1 5.95	15 38.94	0.326
Wed.	25 13 56 32.53	9.558	11 55 24.2	51.99	1 6.06	15 46.43	0.297
Thur.	26 14 0 22.27	9.587	12 16 6.5	51.53	1 6.16	15 53.22	0.268
Frid.	27 14 4 12.71	9.617	12 36 37.4	51.05	1 6.27	15 59.31	0.239
Sat.	28 14 8 3.88	9.647	12 56 56.6	50.55	1 6.37	16 4.68	0.208
Sun.	29 14 11 55.79	9.678	13 17 3.5	50.03	1 6.48	16 9.32	0.178
Mon.	30 14 15 48.44	9.710	13 36 57.9	49.50	1 6.59	16 13.21	0.146
Tues.	31 14 19 41.85	9.741	13 56 39.3	48.95	1 6.71	16 16.34	0.115
Wed.	32 14 23 36.03	9.774	S. 14 16 7.3	48.38	1 6.82	16 18.71	0.082

\* Mean Time of the Semidiameter passing may be found by subtracting 0<sup>h</sup>.18 from the Sidereal Time.

## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be subtracted from Apparent Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi-diameter.*		
		h m s	S. ° ' "	' "	m s	h m s
Sun.	1	12 27 37.13	S. 2 59 4.4	16 0.35	10 7.16	12 37 44.29
Mon.	2	12 31 14.41	3 22 22.1	16 0.63	10 26.43	12 41 40.84
Tues.	3	12 34 51.98	3 45 37.5	16 0.91	10 45.41	12 45 37.39
Wed.	4	12 38 29.86	4 8 50.3	16 1.19	11 4.09	12 49 33.94
Thur.	5	12 42 8.07	4 32 0.1	16 1.47	11 22.43	12 53 30.49
Frid.	6	12 45 46.64	4 55 6.6	16 1.74	11 40.41	12 57 27.04
Sat.	7	12 49 25.59	5 18 9.5	16 2.02	11 58.01	13 1 23.60
Sun.	8	12 53 4.94	5 41 8.3	16 2.30	12 15.21	13 5 20.15
Mon.	9	12 56 44.72	6 4 2.8	16 2.57	12 31.98	13 9 16.70
Tues.	10	13 0 24.95	6 26 52.5	16 2.84	12 48.30	13 13 13.25
Wed.	11	13 4 5.65	6 49 37.2	16 3.11	13 4.15	13 17 9.81
Thur.	12	13 7 46.84	7 12 16.5	16 3.38	13 19.51	13 21 6.36
Frid.	13	13 11 28.55	7 34 49.9	16 3.65	13 34.36	13 25 2.91
Sat.	14	13 15 10.79	7 57 17.2	16 3.92	13 48.68	13 28 59.46
Sun.	15	13 18 53.58	8 19 37.9	16 4.19	14 2.44	13 32 56.02
Mon.	16	13 22 36.94	8 41 51.7	16 4.46	14 15.63	13 36 52.57
Tues.	17	13 26 20.88	9 3 58.2	16 4.72	14 28.24	13 40 49.12
Wed.	18	13 30 5.42	9 25 56.9	16 4.99	14 40.25	13 44 45.67
Thur.	19	13 33 50.58	9 47 47.6	16 5.26	14 51.64	13 48 42.23
Frid.	20	13 37 36.36	10 9 29.7	16 5.53	15 2.41	13 52 38.78
Sat.	21	13 41 22.78	10 31 2.8	16 5.80	15 12.55	13 56 35.33
Sun.	22	13 45 9.85	10 52 26.7	16 6.07	15 22.04	14 0 31.88
Mon.	23	13 48 57.57	11 13 40.7	16 6.34	15 30.87	14 4 28.44
Tues.	24	13 52 45.96	11 34 44.6	16 6.61	15 39.03	14 8 24.99
Wed.	25	13 56 35.04	11 55 37.8	16 6.88	15 46.51	14 12 21.54
Thur.	26	14 0 24.81	12 16 20.1	16 7.15	15 53.29	14 16 18.10
Frid.	27	14 4 15.28	12 36 51.0	16 7.42	15 59.37	14 20 14.65
Sat.	28	14 8 6.47	12 57 10.1	16 7.68	16 4.73	14 24 11.20
Sun.	29	14 11 58.39	13 17 17.0	16 7.95	16 9.36	14 28 7.76
Mon.	30	14 15 51.06	13 37 11.3	16 8.21	16 13.25	14 32 4.31
Tues.	31	14 19 44.49	13 56 52.6	16 8.47	16 16.37	14 36 0.86
Wed.	32	14 23 38.69	S. 14 16 20.4	16 8.72	16 18.73	14 39 57.42

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
				h m s				
1	187° 31' 9.4	N. 0.47	0.0003753	11 20 23.94	14 53.22	14 50.51	54 32.53	54 22.60
2	188 30 11.0	0.36	.0002487	11 16 28.04	14 48.31	14 46.58	54 14.53	54 8.19
3	189 29 14.5	0.24	0.0001224	11 12 32.13	14 45.30	14 44.45	54 3.53	54 0.42
4	190 28 19.9	N. 0.12	9.9999964	11 8 36.22	14 44.02	14 43.95	53 58.81	53 58.58
5	191 27 27.3	0.00	.9998708	11 4 40.32	14 44.26	14 44.91	53 59.70	54 2.10
6	192 26 36.7	S. 0.13	.9997457	11 0 44.41	14 45.92	14 47.26	54 5.77	54 10.68
7	193 25 48.2	0.25	9.9996212	10 56 48.51	14 48.93	14 50.95	54 16.82	54 24.22
8	194 25 1.8	0.35	.9994973	10 52 52.60	14 53.33	14 56.07	54 32.92	54 42.98
9	195 24 17.6	0.43	.9993739	10 48 56.69	14 59.20	15 2.71	54 54.42	55 7.28
10	196 23 35.6	0.49	9.9992510	10 45 0.79	15 6.63	15 10.96	55 21.64	55 37.51
11	197 22 55.8	0.52	.9991287	10 41 4.88	15 15.71	15 20.87	55 54.92	56 13.86
12	198 22 18.3	0.53	.9990068	10 37 8.98	15 26.45	15 32.40	56 34.28	56 56.08
13	199 21 43.1	0.50	9.9988854	10 33 13.07	15 38.69	15 45.26	57 19.12	57 43.20
14	200 21 10.3	0.44	.9987643	10 29 17.16	15 52.03	15 58.91	58 8.01	58 33.23
15	201 20 39.8	0.35	.9986434	10 25 21.26	16 5.79	16 12.52	58 58.43	59 23.08
16	202 20 11.7	0.24	9.9985225	10 21 25.35	16 18.94	16 24.89	59 46.60	60 8.41
17	203 19 45.8	S. 0.11	.9984017	10 17 29.44	16 30.19	16 34.68	60 27.84	60 44.27
18	204 19 22.2	N. 0.03	.9982809	10 13 33.54	16 38.18	16 40.55	60 57.09	61 5.79
19	205 19 0.8	0.17	9.9981599	10 9 37.63	16 41.70	16 41.56	61 9.99	61 9.48
20	206 18 41.4	0.32	.9980387	10 5 41.72	16 40.10	16 37.36	61 4.13	60 54.10
21	207 18 24.1	0.44	.9979173	10 1 45.82	16 33.41	16 28.39	60 39.65	60 21.24
22	208 18 8.7	0.53	9.9977958	9 57 49.91	16 22.43	16 15.74	59 59.43	59 34.86
23	209 17 55.1	0.61	.9976743	9 53 54.00	16 8.47	16 0.83	59 8.23	58 40.26
24	210 17 43.3	0.65	.9975529	9 49 58.09	15 53.01	15 45.20	58 11.62	57 42.96
25	211 17 33.3	0.66	9.9974318	9 46 2.19	15 37.52	15 30.12	57 14.82	56 47.72
26	212 17 24.9	0.64	.9973112	9 42 6.28	15 23.11	15 16.59	56 22.05	55 58.16
27	213 17 18.2	0.59	.9971912	9 38 10.37	15 10.62	15 5.25	55 36.27	55 16.60
28	214 17 13.1	0.52	9.9970721	9 34 14.46	15 0.52	14 56.43	54 59.25	54 44.28
29	215 17 9.7	0.43	.9969538	9 30 18.56	14 52.99	14 50.22	54 31.70	54 21.55
30	216 17 7.9	0.32	.9968366	9 26 22.65	14 48.08	14 46.56	54 13.70	54 8.12
31	217 17 7.8	0.19	.9967205	9 22 26.74	14 45.61	14 45.22	54 4.66	54 3.21
32	218 17 9.4	N. 0.08	9.9966058	9 18 30.83	14 45.34	14 45.93	54 3.66	54 5.84

## MEAN TIME.

Day.	THE MOON'S						
	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
					d	h m	h m
1	318° 12' 40.8	324° 12' 3.4	N. 3° 31' 18.8	N. 3° 5' 21.2	10.31	8 56.7	21 18.8
2	330 9 32.0	336 5 31.7	2 37 30.5	2 8 4.7	11.31	9 40.6	22 2.1
3	342 0 26.1	347 54 37.3	1 37 21.6	1 5 40.0	12.31	10 23.5	22 44.7
4	353 48 25.9	359 42 10.9	N. 0 33 18.7	N. 0 0 37.0	13.31	11 5.8	23 27.0
5	5 36 10.6	11 30 41.8	S. 0 32 5.7	S. 1 4 29.7	14.31	11 48.2	* *
6	17 26 0.7	23 22 22.9	1 36 15.2	2 7 2.7	15.31	12 31.2	0 9.6
7	29 20 3.9	35 19 18.7	2 36 32.6	3 4 25.9	16.31	13 15.2	0 53.1
8	41 20 22.9	47 23 32.3	3 30 23.8	3 54 8.5	17.31	14 0.7	1 37.7
9	53 29 3.4	59 37 13.4	4 15 22.6	4 33 49.7	18.31	14 47.9	2 24.1
10	65 48 20.5	72 2 43.5	4 49 14.2	5 1 21.8	19.31	15 37.1	3 12.3
11	78 20 41.9	84 42 35.9	5 9 59.0	5 14 53.9	20.31	16 28.0	4 2.3
12	91 8 45.8	97 39 31.5	5 15 56.0	5 12 56.7	21.31	17 20.4	4 54.0
13	104 15 11.8	110 56 4.2	5 5 49.2	4 54 29.4	22.31	18 13.8	5 47.0
14	117 42 23.3	124 34 20.5	4 38 56.3	4 19 12.2	23.31	19 8.0	6 40.8
15	131 32 1.9	138 35 28.4	3 55 24.0	3 27 43.2	24.31	20 2.4	7 35.2
16	145 44 33.4	152 59 2.7	2 56 27.2	2 21 59.2	25.31	20 57.1	8 29.7
17	160 18 32.7	167 42 30.7	1 44 48.6	S. 1 5 31.0	26.31	21 52.1	9 24.6
18	175 10 14.3	182 40 52.2	S. 0 24 47.7	N. 0 16 35.7	27.31	22 47.7	10 19.8
19	190 13 25.4	197 46 48.4	N. 0 57 50.4	1 38 6.6	28.31	23 44.0	11 15.7
20	205 19 51.9	212 51 25.4	2 16 35.6	2 52 32.0	29.31	* *	12 12.4
21	220 20 19.6	227 45 29.4	3 25 15.2	3 54 11.7	0.93	0 41.1	13 9.8
22	235 5 56.7	242 20 52.0	4 18 55.5	4 39 8.8	1.93	1 38.6	14 7.3
23	249 29 36.0	256 31 40.3	4 54 41.3	5 5 30.3	2.93	2 35.8	15 4.1
24	263 26 47.9	270 14 52.4	5 11 39.2	5 13 16.5	3.93	3 32.0	15 59.4
25	276 55 57.1	283 30 14.4	5 10 34.6	5 3 48.8	4.93	4 26.2	16 52.4
26	289 58 3.6	296 19 50.5	4 53 16.2	4 39 14.9	5.93	5 17.9	17 42.8
27	302 36 5.1	308 47 21.3	4 22 3.8	4 2 1.5	6.93	6 7.0	18 30.6
28	314 54 14.7	320 57 22.7	3 39 26.8	3 14 38.0	7.93	6 53.7	19 16.2
29	326 57 23.0	332 54 53.0	2 47 53.1	2 19 29.8	8.93	7 38.3	20 0.0
30	338 50 29.1	344 44 46.6	1 49 45.9	1 18 59.0	9.93	8 21.5	20 42.7
31	350 38 18.7	356 31 37.1	N. 0 47 26.7	N. 0 15 26.8	10.93	9 3.8	21 24.9
32	2 25 10.2	8 19 24.6	S. 0 16 42.4	S. 0 48 42.3	11.93	9 46.1	22 7.4

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 1.</b>					<b>TUESDAY 3.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	21 18 10	24	19.903	S. 12 1 20	9	71.16			
1	21 20 9	58	19.877	11 54 12	5	71.64			
2	21 22 8	76	19.850	11 47 1	2	72.13			
3	21 24 7	78	19.823	11 39 46	9	72.62			
4	21 26 6	64	19.798	11 32 29	8	73.08			
5	21 28 5	35	19.773	11 25 9	5	73.56			
6	21 30 3	91	19.748	11 17 47	1	74.03			
7	21 32 2	32	19.722	11 10 21	6	74.48			
8	21 34 0	57	19.697	11 2 53	4	74.93			
9	21 35 58	68	19.673	10 55 22	5	75.38			
10	21 37 56	64	19.648	10 47 48	9	75.81			
11	21 39 54	45	19.624	10 40 12	8	76.24			
12	21 41 52	13	19.601	10 32 34	5	76.67			
13	21 43 49	66	19.578	10 24 52	2	77.09			
14	21 45 47	06	19.554	10 17 8	9	77.51			
15	21 47 44	31	19.531	10 9 22	8	77.92			
16	21 49 41	43	19.509	10 1 33	5	78.33			
17	21 51 38	42	19.487	9 53 42	2	78.72			
18	21 53 35	27	19.464	9 45 49	9	79.11			
19	21 55 31	99	19.443	9 37 53	8	79.50			
20	21 57 28	58	19.422	9 29 55	5	79.88			
21	21 59 25	05	19.401	9 21 54	2	80.25			
22	22 1 21	39	19.380	9 13 52	9	80.63			
23	22 3 17	61	19.359	S. 9 5 47	8	80.99			
<b>MONDAY 2.</b>					<b>WEDNESDAY 4.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	22 5 13	70	19.339	S. 8 57 40	3	81.34			
1	22 7 9	68	19.320	8 49 31	2	81.69			
2	22 9 5	54	19.300	8 41 20	9	82.03			
3	22 11 1	28	19.281	8 33 6	8	82.38			
4	22 12 56	91	19.263	8 24 51	5	82.72			
5	22 14 52	43	19.244	8 16 34	2	83.04			
6	22 16 47	84	19.226	8 8 15	9	83.36			
7	22 18 43	14	19.208	7 59 53	8	83.68			
8	22 20 38	34	19.191	7 51 30	5	83.99			
9	22 22 33	43	19.173	7 43 6	2	84.29			
10	22 24 28	41	19.156	7 34 39	9	84.60			
11	22 26 23	30	19.141	7 26 10	8	84.89			
12	22 28 18	10	19.125	7 17 40	5	85.18			
13	22 30 12	80	19.108	7 9 8	2	85.46			
14	22 32 7	40	19.093	7 0 35	9	85.73			
15	22 34 1	91	19.078	6 51 59	8	86.01			
16	22 35 56	33	19.063	6 43 23	5	86.28			
17	22 37 50	66	19.048	6 34 44	2	86.53			
18	22 39 44	91	19.034	6 26 4	9	86.78			
19	22 41 39	07	19.021	6 17 23	8	87.03			
20	22 43 33	16	19.007	6 8 40	5	87.28			
21	22 45 27	16	18.993	5 59 55	2	87.51			
22	22 47 21	08	18.981	5 51 10	9	87.73			
23	22 49 14	93	18.969	5 42 23	8	87.97			
24	22 51 8	71	18.957	S. 5 33 34	5	88.19			
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	22 51 8	71	18.957	S. 5 33 34	3	88.19			
1	22 53 2	42	18.945	5 24 44	2	88.40			
2	22 54 56	05	18.933	5 15 53	9	88.60			
3	22 56 49	62	18.923	5 7 1	8	88.81			
4	22 58 43	12	18.912	4 58 8	5	89.01			
5	23 0 36	56	18.902	4 49 13	2	89.19			
6	23 2 29	94	18.893	4 40 17	9	89.38			
7	23 4 23	27	18.883	4 31 20	8	89.57			
8	23 6 16	53	18.873	4 22 23	5	89.73			
9	23 8 9	74	18.864	4 13 24	2	89.90			
10	23 10 2	90	18.856	4 4 24	9	90.06			
11	23 11 56	01	18.848	3 55 23	8	90.22			
12	23 13 49	07	18.839	3 46 21	5	90.38			
13	23 15 42	08	18.832	3 37 18	2	90.52			
14	23 17 35	05	18.825	3 28 15	9	90.65			
15	23 19 27	08	18.818	3 19 11	8	90.79			
16	23 21 20	87	18.812	3 10 5	5	90.92			
17	23 23 13	72	18.806	3 1 0	2	91.03			
18	23 25 6	54	18.801	2 51 53	9	91.16			
19	23 26 59	33	18.795	2 42 46	8	91.27			
20	23 28 52	08	18.789	2 33 38	5	91.37			
21	23 30 44	80	18.785	2 24 29	2	91.48			
22	23 32 37	50	18.781	2 15 20	9	91.57			
23	23 34 30	17	18.777	S. 2 6 11	8	91.65			
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	23 36 22	82	18.773	S. 1 57 0	3	91.73			
1	23 38 15	45	18.770	1 47 50	2	91.81			
2	23 40 8	06	18.767	1 38 39	9	91.88			
3	23 42 0	65	18.764	1 29 27	8	91.95			
4	23 43 53	23	18.762	1 20 15	5	92.01			
5	23 45 45	80	18.761	1 11 3	2	92.06			
6	23 47 38	36	18.759	1 1 51	9	92.11			
7	23 49 30	91	18.758	0 52 38	8	92.15			
8	23 51 23	46	18.758	0 43 25	5	92.18			
9	23 53 16	00	18.757	0 34 12	2	92.22			
10	23 55 8	54	18.758	0 24 58	9	92.24			
11	23 57 1	09	18.758	0 15 45	8	92.26			
12	23 58 53	63	18.758	S. 0 6 31	5	92.28			
13	0 0 46	18	18.759	N. 0 2 42	2	92.28			
14	0 2 38	74	18.761	0 11 55	9	92.28			
15	0 4 31	31	18.763	0 21 9	8	92.28			
16	0 6 23	89	18.764	0 30 23	5	92.28			
17	0 8 16	48	18.767	0 39 36	2	92.26			
18	0 10 9	09	18.770	0 48 50	9	92.23			
19	0 12 1	72	18.773	0 58 3	8	92.21			
20	0 13 54	37	18.777	1 7 16	5	92.18			
21	0 15 47	04	18.780	1 16 29	2	92.13			
22	0 17 39	73	18.784	1 25 42	9	92.09			
23	0 19 32	45	18.788	1 34 54	8	92.04			
24	0 21 25	19	18.793	N. 1 44 7	5	91.98			



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 5.</b>					<b>SATURDAY 7.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	0 21 25.19	18.793	N. 1 44 7.0	91.98	0	1 52 49.76	19.416	N. 8 47 56.5	82.30
1	0 23 17.97	18.799	1 53 18.7	91.93	1	1 54 46.32	19.436	8 56 9.2	81.95
2	0 25 10.78	18.805	2 2 30.1	91.86	2	1 56 42.99	19.456	9 4 19.9	81.60
3	0 27 3.63	18.811	2 11 41.0	91.78	3	1 58 39.79	19.477	9 12 28.4	81.23
4	0 28 56.51	18.817	2 20 51.5	91.70	4	2 0 36.71	19.498	9 20 34.7	80.86
5	0 30 49.43	18.823	2 30 1.4	91.62	5	2 2 33.76	19.520	9 28 38.7	80.48
6	0 32 42.39	18.831	2 39 10.9	91.53	6	2 4 30.95	19.542	9 36 40.5	80.11
7	0 34 35.40	18.838	2 48 19.7	91.43	7	2 6 28.26	19.563	9 44 40.0	79.72
8	0 36 28.45	18.845	2 57 28.0	91.33	8	2 8 25.70	19.585	9 52 37.1	79.33
9	0 38 21.54	18.853	3 6 35.6	91.22	9	2 10 23.28	19.608	10 0 31.9	78.93
10	0 40 14.69	18.862	3 15 42.6	91.11	10	2 12 20.99	19.630	10 8 24.2	78.52
11	0 42 7.88	18.870	3 24 48.9	90.98	11	2 14 18.84	19.653	10 16 14.1	78.11
12	0 44 1.13	18.880	3 33 54.4	90.85	12	2 16 16.82	19.676	10 24 1.5	77.69
13	0 45 54.44	18.889	3 42 59.1	90.72	13	2 18 14.95	19.699	10 31 46.4	77.27
14	0 47 47.80	18.898	3 52 3.0	90.58	14	2 20 13.21	19.723	10 39 28.7	76.83
15	0 49 41.22	18.908	4 1 6.1	90.44	15	2 22 11.62	19.747	10 47 8.4	76.40
16	0 51 34.70	18.918	4 10 8.3	90.29	16	2 24 10.17	19.771	10 54 45.5	75.95
17	0 53 28.24	18.929	4 19 9.6	90.13	17	2 26 8.87	19.795	11 2 19.8	75.50
18	0 55 21.85	18.941	4 28 9.9	89.97	18	2 28 7.71	19.819	11 9 51.5	75.05
19	0 57 15.53	18.952	4 37 9.2	89.80	19	2 30 6.70	19.844	11 17 20.4	74.58
20	0 59 9.27	18.963	4 46 7.5	89.63	20	2 32 5.84	19.869	11 24 46.5	74.12
21	1 1 3.08	18.975	4 55 4.8	89.45	21	2 34 5.13	19.894	11 32 9.8	73.65
22	1 2 56.97	18.988	5 4 0.9	89.26	22	2 36 4.57	19.919	11 39 30.3	73.17
23	1 4 50.93	19.000	N. 5 12 55.9	89.08	23	2 38 4.16	19.944	N. 11 46 47.8	72.68
<b>FRIDAY 6.</b>					<b>SUNDAY 8.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	1 6 44.97	19.013	N. 5 21 49.8	88.88	0	2 40 3.90	19.970	N. 11 54 2.4	72.18
1	1 8 39.09	19.027	5 30 42.4	88.67	1	2 42 3.80	19.997	12 1 14.0	71.68
2	1 10 33.29	19.040	5 39 33.8	88.46	2	2 44 3.86	20.023	12 8 22.6	71.18
3	1 12 27.57	19.054	5 48 23.9	88.24	3	2 46 4.07	20.048	12 15 28.1	70.67
4	1 14 21.94	19.068	5 57 12.7	88.02	4	2 48 4.44	20.075	12 22 30.6	70.15
5	1 16 16.39	19.083	6 6 0.1	87.79	5	2 50 4.97	20.102	12 29 29.9	69.62
6	1 18 10.93	19.098	6 14 46.2	87.56	6	2 52 5.66	20.128	12 36 26.0	69.09
7	1 20 5.56	19.113	6 23 30.8	87.32	7	2 54 6.51	20.155	12 43 19.0	68.56
8	1 22 0.28	19.128	6 32 14.0	87.07	8	2 56 7.52	20.182	12 50 8.7	68.01
9	1 23 55.10	19.144	6 40 55.6	86.82	9	2 58 8.69	20.209	12 56 55.1	67.46
10	1 25 50.01	19.160	6 49 35.8	86.57	10	3 0 10.03	20.237	13 3 38.2	66.91
11	1 27 45.02	19.176	6 58 14.4	86.29	11	3 2 11.53	20.264	13 10 18.0	66.35
12	1 29 40.12	19.193	7 6 51.3	86.02	12	3 4 13.20	20.293	13 16 54.4	65.78
13	1 31 35.33	19.210	7 15 26.6	85.75	13	3 6 15.04	20.320	13 23 27.3	65.20
14	1 33 30.64	19.228	7 24 0.3	85.47	14	3 8 17.04	20.348	13 29 56.8	64.63
15	1 35 26.06	19.245	7 32 32.2	85.18	15	3 10 19.21	20.376	13 36 22.8	64.04
16	1 37 21.58	19.262	7 41 2.4	84.88	16	3 12 21.55	20.404	13 42 45.3	63.44
17	1 39 17.20	19.280	7 49 30.8	84.58	17	3 14 24.06	20.433	13 49 4.1	62.84
18	1 41 12.94	19.299	7 57 57.4	84.28	18	3 16 26.74	20.461	13 55 19.4	62.24
19	1 43 8.79	19.318	8 6 22.1	83.96	19	3 18 29.59	20.489	14 1 31.0	61.63
20	1 45 4.75	19.337	8 14 44.9	83.64	20	3 20 32.61	20.518	14 7 38.9	61.02
21	1 47 0.83	19.356	8 23 5.8	83.32	21	3 22 35.81	20.547	14 13 43.2	60.39
22	1 48 57.02	19.375	8 31 24.7	82.98	22	3 24 39.18	20.576	14 19 43.6	59.76
23	1 50 53.33	19.395	8 39 41.6	82.65	23	3 26 42.72	20.604	14 25 40.3	59.13
24	1 52 49.76	19.416	N. 8 47 56.5	82.30	24	3 28 46.43	20.633	N. 14 31 33.1	58.48

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 9.</b>					<b>WEDNESDAY 11.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	3 28 46.43	20.633	N. 14 31 33.1	58.48	0	5 11 12.35	22.029	N. 17 47 17.4	20.97
1	3 30 50.32	20.663	14 37 22.1	57.83	1	5 13 24.61	22.056	17 49 20.5	20.06
2	3 32 54.39	20.693	14 43 7.1	57.18	2	5 15 37.02	22.082	17 51 18.1	19.15
3	3 34 58.63	20.722	14 48 48.3	56.53	3	5 17 49.59	22.109	17 53 10.3	18.23
4	3 37 3.05	20.751	14 54 25.4	55.86	4	5 20 2.33	22.136	17 54 56.9	17.31
5	3 39 7.64	20.780	14 59 58.6	55.18	5	5 22 15.22	22.161	17 56 38.0	16.39
6	3 41 12.41	20.810	15 5 27.6	54.50	6	5 24 28.26	22.187	17 58 13.6	15.46
7	3 43 17.36	20.839	15 10 52.6	53.83	7	5 26 41.46	22.213	17 59 43.5	14.52
8	3 45 22.48	20.868	15 16 13.5	53.14	8	5 28 54.81	22.238	18 1 7.8	13.58
9	3 47 27.78	20.898	15 21 30.3	52.44	9	5 31 8.32	22.264	18 2 26.5	12.65
10	3 49 33.26	20.928	15 26 42.8	51.73	10	5 33 21.08	22.288	18 3 39.6	11.70
11	3 51 38.92	20.958	15 31 51.1	51.03	11	5 35 35.78	22.313	18 4 46.9	10.75
12	3 53 44.76	20.988	15 36 55.2	50.32	12	5 37 49.74	22.338	18 5 48.6	9.78
13	3 55 50.78	21.018	15 41 54.9	49.59	13	5 40 3.84	22.363	18 6 44.5	8.83
14	3 57 56.97	21.047	15 46 50.3	48.87	14	5 42 18.09	22.387	18 7 34.6	7.88
15	4 0 3.34	21.077	15 51 41.4	48.14	15	5 44 32.48	22.411	18 8 19.0	6.92
16	4 2 9.89	21.107	15 56 28.0	47.40	16	5 46 47.02	22.434	18 8 57.6	5.95
17	4 4 16.62	21.137	16 1 10.2	46.66	17	5 49 1.69	22.458	18 9 30.4	4.98
18	4 6 23.53	21.167	16 5 47.9	45.92	18	5 51 16.51	22.482	18 9 57.4	4.01
19	4 8 30.62	21.196	16 10 21.2	45.17	19	5 53 31.47	22.504	18 10 18.5	3.03
20	4 10 37.88	21.225	16 14 49.9	44.40	20	5 55 46.56	22.527	18 10 33.7	2.05
21	4 12 45.32	21.255	16 19 14.0	43.63	21	5 58 1.79	22.550	18 10 43.1	1.07
22	4 14 52.94	21.285	16 23 33.5	42.86	22	6 0 17.16	22.572	18 10 46.5	0.08
23	4 17 0.74	21.315	N. 16 27 48.3	42.08	23	6 2 32.65	22.593	N. 18 10 44.0	0.92
<b>TUESDAY 10.</b>					<b>THURSDAY 12.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	4 19 8.72	21.345	N. 16 31 58.5	41.31	0	6 4 48.28	22.616	N. 18 10 35.5	1.91
1	4 21 16.88	21.374	16 36 4.0	40.52	1	6 7 4.04	22.637	18 10 21.1	2.89
2	4 23 25.21	21.403	16 40 4.8	39.73	2	6 9 19.92	22.658	18 10 0.8	3.89
3	4 25 33.72	21.433	16 44 0.8	38.93	3	6 11 35.94	22.679	18 9 34.4	4.90
4	4 27 42.41	21.463	16 47 51.9	38.12	4	6 13 52.07	22.699	18 9 2.0	5.90
5	4 29 51.27	21.492	16 51 38.2	37.32	5	6 16 8.33	22.720	18 8 23.6	6.91
6	4 32 0.31	21.521	16 55 19.7	36.50	6	6 18 24.71	22.740	18 7 39.1	7.92
7	4 34 9.52	21.550	16 58 56.2	35.68	7	6 20 41.21	22.760	18 6 48.6	8.93
8	4 36 18.91	21.579	17 2 27.8	34.86	8	6 22 57.83	22.780	18 5 52.0	9.93
9	4 38 28.47	21.608	17 5 54.5	34.02	9	6 25 14.57	22.799	18 4 49.4	10.94
10	4 40 38.21	21.637	17 9 16.1	33.18	10	6 27 31.42	22.818	18 3 40.7	11.97
11	4 42 48.12	21.666	17 12 32.7	32.35	11	6 29 48.38	22.836	18 2 25.8	12.98
12	4 44 58.20	21.694	17 15 44.3	31.50	12	6 32 5.45	22.854	18 1 4.9	14.00
13	4 47 8.45	21.723	17 18 50.7	30.65	13	6 34 22.63	22.873	17 59 37.8	15.03
14	4 49 18.87	21.752	17 21 52.1	29.80	14	6 36 39.92	22.891	17 58 4.6	16.04
15	4 51 29.47	21.780	17 24 48.3	28.93	15	6 38 57.32	22.908	17 56 25.3	17.07
16	4 53 40.23	21.808	17 27 39.3	28.07	16	6 41 14.82	22.925	17 54 39.8	18.09
17	4 55 51.17	21.837	17 30 25.1	27.19	17	6 43 32.42	22.943	17 52 48.2	19.12
18	4 58 2.27	21.864	17 33 5.6	26.32	18	6 45 50.13	22.959	17 50 50.4	20.15
19	5 0 13.54	21.892	17 35 40.9	25.44	19	6 48 7.93	22.975	17 48 46.4	21.18
20	5 2 24.97	21.919	17 38 10.9	24.56	20	6 50 25.83	22.992	17 46 36.3	22.21
21	5 4 36.57	21.947	17 40 35.6	23.67	21	6 52 43.83	23.008	17 44 19.9	23.24
22	5 6 48.33	21.974	17 42 54.9	22.78	22	6 55 1.92	23.023	17 41 57.4	24.27
23	5 9 0.26	22.002	17 45 8.9	21.88	23	6 57 20.10	23.038	17 39 28.7	25.30
24	5 11 12.35	22.029	N. 17 47 17.4	20.97	24	6 59 38.37	23.053	N. 17 36 53.8	26.33

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>FRIDAY 13.</b>					<b>SUNDAY 15.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	6 59 38.37	23.053	N. 17 36 53.8	26.33	0	8 51 31.17	23.478	N. 13 33 18.8	74.22
1	7 1 56.73	23.068	17 34 12.7	27.36	1	8 53 52.05	23.483	13 25 50.8	75.13
2	7 4 15.18	23.083	17 31 25.5	28.39	2	8 56 12.96	23.487	13 18 17.3	76.03
3	7 6 33.72	23.097	17 28 32.0	29.43	3	8 58 33.89	23.491	13 10 38.4	76.93
4	7 8 52.34	23.110	17 25 32.3	30.47	4	9 0 54.85	23.495	13 2 54.2	77.82
5	7 11 11.04	23.123	17 22 26.4	31.50	5	9 3 15.83	23.498	12 55 4.6	78.71
6	7 13 29.82	23.137	17 19 14.3	32.53	6	9 5 36.83	23.503	12 47 9.7	79.59
7	7 15 48.68	23.150	17 15 56.0	33.57	7	9 7 57.86	23.507	12 39 9.5	80.47
8	7 18 7.62	23.163	17 12 31.5	34.60	8	9 10 18.91	23.510	12 31 4.1	81.33
9	7 20 26.63	23.175	17 9 0.8	35.63	9	9 12 39.98	23.514	12 22 53.5	82.20
10	7 22 45.72	23.188	17 5 23.9	36.66	10	9 15 1.08	23.518	12 14 37.7	83.05
11	7 25 4.88	23.199	17 1 40.9	37.69	11	9 17 22.19	23.521	12 6 16.9	83.89
12	7 27 24.11	23.210	16 57 51.6	38.73	12	9 19 43.33	23.524	11 57 51.0	84.73
13	7 29 43.40	23.222	16 53 56.1	39.76	13	9 22 4.48	23.528	11 49 20.1	85.57
14	7 32 2.77	23.233	16 49 54.5	40.78	14	9 24 25.66	23.531	11 40 44.2	86.39
15	7 34 22.20	23.243	16 45 46.8	41.81	15	9 26 46.85	23.534	11 32 3.4	87.21
16	7 36 41.69	23.254	16 41 32.8	42.84	16	9 29 8.07	23.538	11 23 17.7	88.03
17	7 39 1.25	23.265	16 37 12.7	43.86	17	9 31 29.31	23.541	11 14 27.1	88.83
18	7 41 20.87	23.275	16 32 46.5	44.88	18	9 33 50.56	23.544	11 5 31.8	89.62
19	7 43 40.55	23.284	16 28 14.1	45.91	19	9 36 11.84	23.548	10 56 31.7	90.41
20	7 46 0.28	23.293	16 23 35.6	46.93	20	9 38 33.13	23.551	10 47 26.9	91.18
21	7 48 20.07	23.303	16 18 51.0	47.94	21	9 40 54.45	23.555	10 38 17.5	91.95
22	7 50 39.92	23.313	16 14 0.3	48.96	22	9 43 15.79	23.558	10 29 3.5	92.71
23	7 52 59.82	23.321	N. 16 9 3.5	49.98	23	9 45 37.14	23.561	N. 10 19 45.0	93.46
<b>SATURDAY 14.</b>					<b>MONDAY 16.</b>				
	h m s	s	N. ° ' "	"		h m s	s	N. ° ' "	"
0	7 55 19.77	23.330	N. 16 4 0.6	50.98	0	9 47 58.52	23.565	N. 10 10 22.0	94.21
1	7 57 39.78	23.339	15 58 51.7	51.99	1	9 50 19.92	23.568	10 0 54.5	94.94
2	7 59 59.84	23.347	15 53 36.7	53.00	2	9 52 41.33	23.571	9 51 22.7	95.67
3	8 2 19.94	23.354	15 48 15.7	54.00	3	9 55 2.77	23.575	9 41 46.5	96.38
4	8 4 40.09	23.362	15 42 48.7	55.00	4	9 57 24.23	23.578	9 32 6.1	97.08
5	8 7 0.29	23.370	15 37 15.7	56.00	5	9 59 45.71	23.582	9 22 21.5	97.78
6	8 9 20.53	23.377	15 31 36.7	56.99	6	10 2 7.21	23.585	9 12 32.7	98.48
7	8 11 40.81	23.384	15 25 51.8	57.98	7	10 4 28.73	23.588	9 2 39.8	99.16
8	8 14 1.14	23.391	15 20 1.0	58.97	8	10 6 50.27	23.593	8 52 42.8	99.83
9	8 16 21.50	23.398	15 14 4.2	59.96	9	10 9 11.84	23.597	8 42 41.9	100.48
10	8 18 41.91	23.404	15 8 1.5	60.94	10	10 11 33.43	23.600	8 32 37.1	101.13
11	8 21 2.35	23.410	15 1 52.9	61.92	11	10 13 55.04	23.604	8 22 28.4	101.77
12	8 23 22.83	23.417	14 55 38.5	62.88	12	10 16 16.68	23.608	8 12 15.9	102.39
13	8 25 43.35	23.423	14 49 18.3	63.85	13	10 18 38.34	23.612	8 1 59.7	103.00
14	8 28 3.90	23.428	14 42 52.3	64.82	14	10 21 0.02	23.616	7 51 39.9	103.61
15	8 30 24.49	23.434	14 36 20.5	65.78	15	10 23 21.73	23.621	7 41 16.4	104.21
16	8 32 45.11	23.439	14 29 42.9	66.73	16	10 25 43.47	23.625	7 30 49.4	104.79
17	8 35 5.76	23.444	14 22 59.7	67.68	17	10 28 5.23	23.628	7 20 18.9	105.37
18	8 37 26.44	23.450	14 16 10.7	68.64	18	10 30 27.01	23.633	7 9 45.0	105.93
19	8 39 47.16	23.455	14 9 16.0	69.58	19	10 32 48.83	23.638	6 59 7.7	106.48
20	8 42 7.90	23.460	14 2 15.8	70.51	20	10 35 10.67	23.643	6 48 27.2	107.02
21	8 44 28.68	23.465	13 55 9.9	71.45	21	10 37 32.54	23.648	6 37 43.5	107.54
22	8 46 49.48	23.469	13 47 58.4	72.38	22	10 39 54.45	23.653	6 26 56.7	108.06
23	8 49 10.31	23.474	13 40 41.4	73.30	23	10 42 16.38	23.658	6 16 6.8	108.57
24	8 51 31.17	23.478	N. 13 33 18.8	74.22	24	10 44 38.34	23.663	N. 6 5 13.9	109.06

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>TUESDAY 17.</b>					<b>THURSDAY 19.</b>				
	h m s	s	N. ° ' "	109. ° ' "		h m s	s	S. ° ' "	116. ° ' "
0	10 44 38.34	23.663	N. 6 5 13.9	109.06	0	12 39 5.82	24.083	S. 3 9 47.2	116.73
1	10 47 0.34	23.668	5 54 18.1	109.53	1	12 41 30.35	24.095	3 21 27.0	116.53
2	10 49 22.36	23.673	5 43 19.5	110.01	2	12 43 54.96	24.108	3 33 5.5	116.31
3	10 51 44.42	23.680	5 32 18.0	110.47	3	12 46 19.64	24.119	3 44 42.7	116.08
4	10 54 6.52	23.686	5 21 13.9	110.90	4	12 48 44.39	24.131	3 56 18.5	115.83
5	10 56 28.65	23.692	5 10 7.2	111.33	5	12 51 9.21	24.143	4 7 52.7	115.57
6	10 58 50.82	23.698	4 58 57.9	111.75	6	12 53 34.11	24.156	4 19 25.3	115.29
7	11 1 13.02	23.703	4 47 46.2	112.16	7	12 55 59.08	24.168	4 30 56.2	115.00
8	11 3 35.26	23.709	4 36 32.0	112.55	8	12 58 24.12	24.180	4 42 25.3	114.69
9	11 5 57.53	23.716	4 25 15.6	112.93	9	13 0 49.24	24.193	4 53 52.5	114.37
10	11 8 19.85	23.723	4 13 56.9	113.30	10	13 3 14.43	24.205	5 5 17.7	114.03
11	11 10 42.21	23.729	4 2 36.0	113.65	11	13 5 39.70	24.218	5 16 40.9	113.68
12	11 13 4.60	23.736	3 51 13.1	113.98	12	13 8 5.04	24.230	5 28 1.9	113.31
13	11 15 27.04	23.743	3 39 48.2	114.32	13	13 10 30.46	24.243	5 39 20.6	112.93
14	11 17 49.52	23.751	3 28 21.3	114.63	14	13 12 55.95	24.255	5 50 37.0	112.53
15	11 20 12.05	23.758	3 16 52.6	114.93	15	13 15 21.52	24.268	6 1 51.0	112.12
16	11 22 34.62	23.766	3 5 22.1	115.22	16	13 17 47.16	24.280	6 13 2.4	111.68
17	11 24 57.24	23.773	2 53 50.0	115.48	17	13 20 12.88	24.293	6 24 11.2	111.25
18	11 27 19.90	23.781	2 42 16.3	115.73	18	13 22 38.67	24.305	6 35 17.4	110.79
19	11 29 42.61	23.789	2 30 41.1	115.99	19	13 25 4.54	24.318	6 46 20.7	110.32
20	11 32 5.37	23.797	2 19 4.4	116.22	20	13 27 30.48	24.329	6 57 21.2	109.83
21	11 34 28.17	23.805	2 7 26.4	116.43	21	13 29 56.49	24.342	7 8 18.7	109.33
22	11 36 51.03	23.814	1 55 47.2	116.63	22	13 32 22.58	24.354	7 19 13.1	108.82
23	11 39 13.94	23.823	N. 1 44 6.8	116.83	23	13 34 48.74	24.366	S. 7 30 4.5	108.29
<b>WEDNESDAY 18.</b>					<b>FRIDAY 20.</b>				
	h m s	s	N. ° ' "	117. ° ' "		h m s	s	S. ° ' "	107. ° ' "
0	11 41 36.90	23.831	N. 1 32 25.2	117.01	0	13 37 14.97	24.378	S. 7 40 52.6	107.74
1	11 43 59.91	23.840	1 20 42.7	117.16	1	13 39 41.27	24.390	7 51 37.4	107.18
2	11 46 22.98	23.849	1 8 59.3	117.30	2	13 42 7.65	24.403	8 2 18.8	106.62
3	11 48 46.10	23.858	0 57 15.1	117.43	3	13 44 34.10	24.414	8 12 56.8	106.03
4	11 51 9.28	23.868	0 45 30.1	117.56	4	13 47 0.62	24.426	8 23 31.2	105.43
5	11 53 32.51	23.877	0 33 44.4	117.66	5	13 49 27.21	24.438	8 34 1.9	104.82
6	11 55 55.80	23.887	0 21 58.2	117.73	6	13 51 53.87	24.449	8 44 29.0	104.19
7	11 58 19.15	23.897	N. 0 10 11.6	117.81	7	13 54 20.60	24.460	8 54 52.2	103.54
8	12 0 42.56	23.907	S. 0 1 35.5	117.87	8	13 56 47.39	24.471	9 5 11.5	102.89
9	12 3 6.03	23.917	0 13 22.9	117.91	9	13 59 14.25	24.483	9 15 26.9	102.23
10	12 5 29.56	23.927	0 25 10.4	117.93	10	14 1 41.18	24.493	9 25 38.3	101.55
11	12 7 53.15	23.938	0 36 58.1	117.95	11	14 4 8.17	24.503	9 35 45.5	100.85
12	12 10 16.81	23.948	0 48 45.8	117.94	12	14 6 35.22	24.514	9 45 48.5	100.14
13	12 12 40.53	23.958	1 0 33.4	117.93	13	14 9 2.34	24.525	9 55 47.2	99.43
14	12 15 4.31	23.968	1 12 20.9	117.90	14	14 11 29.52	24.534	10 5 41.6	98.70
15	12 17 28.15	23.980	1 24 8.2	117.85	15	14 13 56.75	24.544	10 15 31.6	97.95
16	12 19 52.07	23.992	1 35 55.1	117.78	16	14 16 24.05	24.555	10 25 17.0	97.19
17	12 22 16.05	24.002	1 47 41.5	117.70	17	14 18 51.41	24.564	10 34 57.9	96.42
18	12 24 40.09	24.013	1 59 27.5	117.61	18	14 21 18.82	24.573	10 44 34.1	95.64
19	12 27 4.21	24.025	2 11 12.8	117.50	19	14 23 46.28	24.582	10 54 5.6	94.85
20	12 29 28.39	24.036	2 22 57.5	117.37	20	14 26 13.80	24.591	11 3 32.3	94.05
21	12 31 52.64	24.048	2 34 41.3	117.23	21	14 28 41.37	24.598	11 12 54.2	93.23
22	12 34 16.96	24.060	2 46 24.3	117.08	22	14 31 8.98	24.607	11 22 11.1	92.40
23	12 36 41.36	24.072	2 58 6.3	116.91	23	14 33 36.65	24.615	11 31 23.0	91.57
24	12 39 5.82	24.083	S. 3 9 47.2	116.73	24	14 36 4.36	24.623	S. 11 40 29.9	90.72

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
SATURDAY 21.					MONDAY 23.				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	14 36 4.36	24.623	S. 11 40 29.9	90.72	0	16 34 21.82	24.477	S. 17 1 25.5	40.63
1	14 38 32.12	24.630	11 49 31.6	89.85	1	16 36 48.64	24.462	17 5 25.8	39.48
2	14 40 59.92	24.637	11 58 28.1	88.98	2	16 39 15.36	24.445	17 9 19.3	38.33
3	14 43 27.76	24.643	12 7 19.3	88.09	3	16 41 41.98	24.428	17 13 5.8	37.17
4	14 45 55.64	24.649	12 16 5.2	87.21	4	16 44 8.50	24.411	17 16 45.3	36.02
5	14 48 23.55	24.655	12 24 45.8	86.30	5	16 46 34.91	24.393	17 20 18.0	34.87
6	14 50 51.50	24.661	12 33 20.8	85.38	6	16 49 1.21	24.373	17 23 43.7	33.71
7	14 53 19.48	24.666	12 41 50.4	84.47	7	16 51 27.39	24.354	17 27 2.5	32.56
8	14 55 47.49	24.671	12 50 14.4	83.53	8	16 53 53.46	24.335	17 30 14.4	31.40
9	14 58 15.53	24.676	12 58 32.8	82.59	9	16 56 19.41	24.314	17 33 19.3	30.25
10	15 0 43.60	24.680	13 6 45.5	81.64	10	16 58 45.23	24.293	17 36 17.4	29.10
11	15 3 11.69	24.683	13 14 52.5	80.68	11	17 1 10.92	24.271	17 39 8.5	27.94
12	15 5 39.80	24.687	13 22 53.6	79.71	12	17 3 36.48	24.248	17 41 52.7	26.79
13	15 8 7.93	24.689	13 30 49.0	78.73	13	17 6 1.90	24.226	17 44 30.0	25.64
14	15 10 36.07	24.692	13 38 38.4	77.74	14	17 8 27.19	24.203	17 47 0.4	24.49
15	15 13 4.23	24.694	13 46 21.9	76.75	15	17 10 52.34	24.179	17 49 23.9	23.34
16	15 15 32.40	24.696	13 53 59.4	75.74	16	17 13 17.34	24.155	17 51 40.5	22.19
17	15 18 0.58	24.697	14 1 30.8	74.73	17	17 15 42.20	24.130	17 53 50.2	21.05
18	15 20 28.76	24.697	14 8 56.2	73.72	18	17 18 6.90	24.104	17 55 53.1	19.92
19	15 22 56.94	24.697	14 16 15.4	72.69	19	17 20 31.45	24.078	17 57 49.2	18.78
20	15 25 25.13	24.697	14 23 28.5	71.66	20	17 22 55.84	24.053	17 59 38.4	17.63
21	15 27 53.31	24.696	14 30 35.3	70.62	21	17 25 20.08	24.026	18 1 20.8	16.50
22	15 30 21.48	24.695	14 37 35.9	69.57	22	17 27 44.15	23.998	18 2 56.4	15.37
23	15 32 49.65	24.694	S. 14 44 30.1	68.51	23	17 30 8.05	23.970	S. 18 4 25.2	14.24
SUNDAY 22.					TUESDAY 24.				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	15 35 17.81	24.692	S. 14 51 18.0	67.46	0	17 32 31.79	23.942	S. 18 5 47.3	13.11
1	15 37 45.95	24.688	14 57 59.6	66.39	1	17 34 55.35	23.913	18 7 2.5	11.98
2	15 40 14.07	24.685	15 4 34.7	65.31	2	17 37 18.74	23.883	18 8 11.1	10.87
3	15 42 42.17	24.682	15 11 3.3	64.23	3	17 39 41.95	23.853	18 9 13.0	9.75
4	15 45 10.25	24.678	15 17 25.5	63.15	4	17 42 4.98	23.823	18 10 8.1	8.63
5	15 47 38.30	24.673	15 23 41.1	62.06	5	17 44 27.82	23.792	18 10 56.6	7.52
6	15 50 6.32	24.668	15 29 50.2	60.97	6	17 46 50.48	23.761	18 11 38.4	6.42
7	15 52 34.31	24.662	15 35 52.7	59.87	7	17 49 12.95	23.729	18 12 13.7	5.32
8	15 55 2.26	24.656	15 41 48.6	58.77	8	17 51 35.23	23.697	18 12 42.3	4.22
9	15 57 30.18	24.649	15 47 37.9	57.66	9	17 53 57.31	23.664	18 13 4.3	3.13
10	15 59 58.05	24.641	15 53 20.5	56.54	10	17 56 19.20	23.632	18 13 19.8	2.04
11	16 2 25.87	24.633	15 58 56.4	55.43	11	17 58 40.89	23.598	18 13 28.8	0.96
12	16 4 53.64	24.624	16 4 25.6	54.31	12	18 1 2.38	23.564	18 13 31.3	0.13
13	16 7 21.36	24.616	16 9 48.1	53.18	13	18 3 23.66	23.529	18 13 27.3	1.21
14	16 9 49.03	24.606	16 15 3.8	52.05	14	18 5 44.73	23.495	18 13 16.8	2.28
15	16 12 16.63	24.595	16 20 12.7	50.92	15	18 8 5.60	23.461	18 13 0.0	3.33
16	16 14 44.17	24.585	16 25 14.9	49.79	16	18 10 26.26	23.425	18 12 36.8	4.40
17	16 17 11.65	24.574	16 30 10.2	48.65	17	18 12 46.70	23.389	18 12 7.2	5.46
18	16 19 39.06	24.562	16 34 58.7	47.51	18	18 15 6.93	23.353	18 11 31.3	6.51
19	16 22 6.39	24.548	16 39 40.3	46.37	19	18 17 26.94	23.317	18 10 49.1	7.55
20	16 24 33.64	24.536	16 44 15.1	45.23	20	18 19 46.73	23.280	18 10 0.7	8.59
21	16 27 0.82	24.523	16 48 43.1	44.08	21	18 22 6.30	23.243	18 9 6.0	9.63
22	16 29 27.91	24.508	16 53 4.1	42.93	22	18 24 25.65	23.206	18 8 5.2	10.66
23	16 31 54.91	24.493	16 57 18.3	41.78	23	18 26 44.77	23.168	18 6 58.1	11.68
24	16 34 21.82	24.477	S. 17 1 25.5	40.63	24	18 29 3.66	23.130	S. 18 5 45.0	12.69

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 25.</b>					<b>FRIDAY 27.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	18 29 3.66	23.130	S. 18° 5' 45.0	12.69	0	20 15 24.40	21.164	S. 15° 19' 44.6	53.85
1	18 31 22.33	23.092	18 4 25.8	13.71	1	20 17 31.26	21.124	15 14 19.4	54.54
2	18 33 40.77	23.053	18 3 0.5	14.72	2	20 19 37.89	21.084	15 8 50.1	55.22
3	18 35 58.97	23.014	18 1 29.2	15.72	3	20 21 44.27	21.044	15 3 16.7	55.89
4	18 38 16.94	22.976	17 59 51.9	16.72	4	20 23 50.42	21.005	14 57 39.4	56.56
5	18 40 34.68	22.937	17 58 8.6	17.70	5	20 25 56.33	20.965	14 51 58.0	57.23
6	18 42 52.18	22.898	17 56 19.5	18.68	6	20 28 2.00	20.926	14 46 12.7	57.88
7	18 45 9.45	22.858	17 54 24.5	19.66	7	20 30 7.44	20.888	14 40 23.5	58.53
8	18 47 26.47	22.818	17 52 23.6	20.63	8	20 32 12.65	20.849	14 34 30.4	59.17
9	18 49 43.26	22.778	17 50 16.9	21.59	9	20 34 17.63	20.810	14 28 33.5	59.79
10	18 51 59.81	22.738	17 48 4.5	22.54	10	20 36 22.37	20.771	14 22 32.9	60.42
11	18 54 16.11	22.697	17 45 46.4	23.49	11	20 38 26.88	20.733	14 16 28.5	61.04
12	18 56 32.17	22.656	17 43 22.6	24.44	12	20 40 31.17	20.696	14 10 20.4	61.66
13	18 58 47.98	22.615	17 40 53.1	25.38	13	20 42 35.23	20.658	14 4 8.6	62.26
14	19 1 3.55	22.575	17 38 18.0	26.31	14	20 44 39.07	20.621	13 57 53.3	62.85
15	19 3 18.88	22.534	17 35 37.4	27.23	15	20 46 42.68	20.583	13 51 34.4	63.45
16	19 5 33.96	22.492	17 32 51.3	28.15	16	20 48 46.07	20.547	13 45 11.9	64.04
17	19 7 48.78	22.450	17 29 59.6	29.07	17	20 50 49.24	20.510	13 38 45.9	64.62
18	19 10 3.36	22.410	17 27 2.5	29.96	18	20 52 52.19	20.474	13 32 16.5	65.18
19	19 12 17.70	22.368	17 24 0.1	30.86	19	20 54 54.93	20.438	13 25 43.7	65.75
20	19 14 31.78	22.326	17 20 52.2	31.75	20	20 56 57.45	20.403	13 19 7.5	66.32
21	19 16 45.61	22.285	17 17 39.1	32.63	21	20 58 59.76	20.368	13 12 27.9	66.87
22	19 18 59.20	22.243	17 14 20.6	33.52	22	21 1 1.86	20.332	13 5 45.1	67.41
23	19 21 12.53	22.201	S. 17 10 56.9	34.38	23	21 3 3.74	20.297	S. 12 58 59.0	67.95
<b>THURSDAY 26.</b>					<b>SATURDAY 28.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	19 23 25.61	22.159	S. 17 7 28.0	35.24	0	21 5 5.42	20.263	S. 12 52 9.7	68.48
1	19 25 38.44	22.117	17 3 54.0	36.09	1	21 7 6.89	20.228	12 45 17.2	69.02
2	19 27 51.01	22.075	17 0 14.9	36.95	2	21 9 8.16	20.195	12 38 21.5	69.53
3	19 30 3.34	22.033	16 56 30.6	37.79	3	21 11 9.23	20.161	12 31 22.8	70.04
4	19 32 15.41	21.992	16 52 41.4	38.63	4	21 13 10.09	20.128	12 24 21.0	70.56
5	19 34 27.24	21.950	16 48 47.1	39.46	5	21 15 10.76	20.095	12 17 16.1	71.06
6	19 36 38.81	21.908	16 44 47.9	40.27	6	21 17 11.23	20.063	12 10 8.3	71.55
7	19 38 50.13	21.866	16 40 43.9	41.08	7	21 19 11.51	20.030	12 2 57.5	72.04
8	19 41 1.20	21.823	16 36 34.9	41.90	8	21 21 11.59	19.998	11 55 43.8	72.53
9	19 43 12.01	21.782	16 32 21.1	42.69	9	21 23 11.48	19.966	11 48 27.2	73.00
10	19 45 22.58	21.740	16 28 2.6	43.48	10	21 25 11.18	19.935	11 41 7.8	73.47
11	19 47 32.89	21.698	16 23 39.3	44.28	11	21 27 10.70	19.905	11 33 45.6	73.93
12	19 49 42.96	21.657	16 19 11.3	45.06	12	21 29 10.04	19.874	11 26 20.6	74.40
13	19 51 52.77	21.615	16 14 38.6	45.83	13	21 31 9.19	19.843	11 18 52.8	74.85
14	19 54 2.34	21.573	16 10 1.4	46.58	14	21 33 8.16	19.814	11 11 22.4	75.28
15	19 56 11.65	21.532	16 5 19.6	47.35	15	21 35 6.96	19.785	11 3 49.4	75.73
16	19 58 20.72	21.491	16 0 33.2	48.10	16	21 37 5.58	19.755	10 56 13.7	76.17
17	20 0 29.54	21.449	15 55 42.4	48.84	17	21 39 4.02	19.726	10 48 35.4	76.59
18	20 2 38.11	21.408	15 50 47.1	49.58	18	21 41 2.29	19.698	10 40 54.6	77.02
19	20 4 46.44	21.368	15 45 47.5	50.31	19	21 43 0.40	19.671	10 33 11.2	77.43
20	20 6 54.52	21.327	15 40 43.4	51.03	20	21 44 58.34	19.643	10 25 25.4	77.83
21	20 9 2.36	21.286	15 35 35.1	51.74	21	21 46 56.11	19.616	10 17 37.2	78.24
22	20 11 9.95	21.244	15 30 22.5	52.46	22	21 48 53.73	19.589	10 9 46.5	78.64
23	20 13 17.29	21.204	15 25 5.6	53.16	23	21 50 51.18	19.562	10 1 53.5	79.03
24	20 15 24.40	21.164	S. 15 19 44.6	53.85	24	21 52 48.47	19.536	S. 9 53 58.2	79.42

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 29.</b>					<b>TUESDAY 31.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 52 48.47	19.536	S. 9 53 58.2	79.42	0	23 24 21.10	18.768	S. 2 59 2.1	91.37
1	21 54 45.61	19.511	9 46 0.5	79.80	1	23 26 13.69	18.763	2 49 53.5	91.48
2	21 56 42.60	19.485	9 38 0.6	80.17	2	23 28 6.25	18.758	2 40 44.3	91.59
3	21 58 39.43	19.460	9 29 58.5	80.54	3	23 29 58.78	18.753	2 31 34.4	91.70
4	22 0 36.12	19.437	9 21 54.1	80.91	4	23 31 51.28	18.748	2 22 23.9	91.79
5	22 2 32.67	19.413	9 13 47.6	81.26	5	23 33 43.76	18.744	2 13 12.9	91.88
6	22 4 29.07	19.388	9 5 39.0	81.61	6	23 35 36.21	18.740	2 4 1.3	91.98
7	22 6 25.32	19.364	8 57 28.3	81.95	7	23 37 28.64	18.737	1 54 49.1	92.07
8	22 8 21.44	19.342	8 49 15.6	82.29	8	23 39 21.06	18.735	1 45 36.5	92.14
9	22 10 17.43	19.320	8 41 0.8	82.63	9	23 41 13.46	18.733	1 36 23.4	92.22
10	22 12 13.28	19.298	8 32 44.0	82.96	10	23 43 5.85	18.731	1 27 9.9	92.28
11	22 14 9.00	19.276	8 24 25.3	83.28	11	23 44 58.23	18.729	1 17 56.0	92.35
12	22 16 4.59	19.254	8 16 4.7	83.60	12	23 46 50.60	18.728	1 8 41.7	92.40
13	22 18 0.05	19.233	8 7 42.1	83.92	13	23 48 42.96	18.728	0 59 27.2	92.45
14	22 19 55.39	19.213	7 59 17.7	84.22	14	23 50 35.33	18.728	0 50 12.3	92.50
15	22 21 50.60	19.193	7 50 51.5	84.51	15	23 52 27.69	18.727	0 40 57.2	92.54
16	22 23 45.70	19.173	7 42 23.6	84.81	16	23 54 20.05	18.728	0 31 41.8	92.58
17	22 25 40.68	19.154	7 33 53.8	85.10	17	23 56 12.42	18.729	0 22 26.3	92.60
18	22 27 35.55	19.136	7 25 22.4	85.38	18	23 58 4.80	18.731	0 13 10.6	92.63
19	22 29 30.31	19.117	7 16 49.2	85.67	19	23 59 57.19	18.733	S. 0 3 54.8	92.65
20	22 31 24.95	19.098	7 8 14.4	85.93	20	0 1 49.59	18.734	N. 0 5 21.2	92.67
21	22 33 19.49	19.082	6 59 38.0	86.20	21	0 3 42.00	18.737	0 14 37.2	92.67
22	22 35 13.93	19.065	6 51 0.0	86.46	22	0 5 34.43	18.740	0 23 53.2	92.67
23	22 37 8.27	19.048	S. 6 42 20.5	86.72	23	0 7 26.88	18.743	N. 0 33 9.2	92.67
<b>MONDAY 30.</b>					<b>WEDNESDAY, NOV. 1.</b>				
0	22 39 2.50	19.031	S. 6 33 39.4	86.98	0	0 9 19.35	18.748	N. 0 42 25.2	92.66
1	22 40 56.64	19.016	6 24 56.8	87.22					
2	22 42 50.69	19.000	6 16 12.8	87.45					
3	22 44 44.64	18.985	6 7 27.4	87.69					
4	22 46 38.51	18.971	5 58 40.5	87.92					
5	22 48 32.29	18.957	5 49 52.4	88.14					
6	22 50 25.99	18.943	5 41 2.8	88.37					
7	22 52 19.60	18.929	5 32 12.0	88.57					
8	22 54 13.14	18.917	5 23 20.0	88.78					
9	22 56 6.60	18.903	5 14 26.7	88.98					
10	22 57 59.98	18.892	5 5 32.2	89.18					
11	22 59 53.30	18.881	4 56 36.6	89.37					
12	23 1 46.55	18.869	4 47 39.8	89.56					
13	23 3 39.73	18.858	4 38 41.9	89.73					
14	23 5 32.84	18.848	4 29 43.0	89.91					
15	23 7 25.90	18.838	4 20 43.0	90.08					
16	23 9 18.90	18.828	4 11 42.0	90.24					
17	23 11 11.84	18.819	4 2 40.1	90.40					
18	23 13 4.73	18.811	3 53 37.2	90.56					
19	23 14 57.57	18.803	3 44 33.4	90.70					
20	23 16 50.36	18.795	3 35 28.8	90.84					
21	23 18 43.11	18.788	3 26 23.3	90.98					
22	23 20 35.81	18.781	3 17 17.0	91.12					
23	23 22 28.48	18.774	3 8 9.9	91.24					
24	23 24 21.10	18.768	S. 2 59 2.1	91.37					

## PHASES OF THE MOON.

Oct.		h m
5	○ Full Moon - - -	12 58.3
13	☾ Last Quarter - - -	9 55.4
20	● New Moon - - -	1 40.2
27	☽ First Quarter - - -	1 26.4

Oct.		h
4	☾ Apogee - - - - -	8.0
19	☾ Perigee - - - - -	4.7
31	☾ Apogee - - - - -	15.2

## AT APPARENT NOON.

Date.	THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be subtracted from Apparent Time.	Var. in 1 hour
	Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.			
	h m s	s	° ' "	"	m s	m s	s
Wed.	1 14 23 36.03	9.774	S. 14 16 7.3	48.38	1 6.82	16 18.71	0.082
Thur.	2 14 27 31.00	9.807	14 35 21.5	47.80	1 6.93	16 20.29	0.049
Frid.	3 14 31 26.77	9.840	14 54 21.6	47.20	1 7.05	16 21.07	0.016
Sat.	4 14 35 23.34	9.874	15 13 7.1	46.58	1 7.16	16 21.05	0.018
Sun.	5 14 39 20.74	9.909	15 31 37.6	45.95	1 7.28	16 20.21	0.052
Mon.	6 14 43 18.97	9.944	15 49 52.8	45.30	1 7.40	16 18.54	0.087
Tues.	7 14 47 18.04	9.979	16 7 52.2	44.64	1 7.52	16 16.04	0.122
Wed.	8 14 51 17.95	10.014	16 25 35.5	43.96	1 7.64	16 12.69	0.157
Thur.	9 14 55 18.72	10.050	16 43 2.2	43.26	1 7.75	16 8.48	0.193
Frid.	10 14 59 20.36	10.086	17 0 12.0	42.55	1 7.87	16 3.41	0.229
Sat.	11 15 3 22.86	10.122	17 17 4.4	41.81	1 7.99	15 57.48	0.265
Sun.	12 15 7 26.24	10.159	17 33 39.1	41.07	1 8.11	15 50.67	0.302
Mon.	13 15 11 30.49	10.195	17 49 55.7	40.31	1 8.23	15 43.00	0.338
Tues.	14 15 15 35.61	10.231	18 5 53.8	39.53	1 8.35	15 34.46	0.374
Wed.	15 15 19 41.60	10.268	18 21 33.0	38.73	1 8.47	15 25.05	0.410
Thur.	16 15 23 48.46	10.304	18 36 52.8	37.91	1 8.58	15 14.77	0.446
Frid.	17 15 27 56.17	10.339	18 51 52.9	37.09	1 8.70	15 3.64	0.481
Sat.	18 15 32 4.73	10.374	19 6 33.0	36.24	1 8.82	14 51.67	0.516
Sun.	19 15 36 14.13	10.409	19 20 52.5	35.38	1 8.93	14 38.86	0.551
Mon.	20 15 40 24.36	10.443	19 34 51.1	34.50	1 9.05	14 25.23	0.585
Tues.	21 15 44 35.39	10.476	19 48 28.4	33.60	1 9.16	14 10.79	0.618
Wed.	22 15 48 47.23	10.510	20 1 44.1	32.69	1 9.27	13 55.55	0.651
Thur.	23 15 52 59.85	10.542	20 14 37.7	31.77	1 9.38	13 39.53	0.684
Frid.	24 15 57 13.24	10.574	20 27 8.9	30.83	1 9.49	13 22.74	0.715
Sat.	25 16 1 27.39	10.605	20 39 17.4	29.87	1 9.59	13 5.20	0.746
Sun.	26 16 5 42.28	10.636	20 51 2.7	28.90	1 9.70	12 46.91	0.777
Mon.	27 16 9 57.90	10.666	21 2 24.7	27.92	1 9.80	12 27.90	0.807
Tues.	28 16 14 14.24	10.695	21 13 22.9	26.92	1 9.90	12 8.18	0.836
Wed.	29 16 18 31.27	10.724	21 23 57.0	25.91	1 9.99	11 47.76	0.865
Thur.	30 16 22 48.98	10.752	21 34 6.8	24.89	1 10.09	11 26.66	0.893
Frid.	31 16 27 7.36	10.779	S. 21 43 51.9	23.86	1 10.18	11 4.89	0.920

\* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.



## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be subtracted from Apparent Time.	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi-diameter.*		
		h m s	S. ° ' "	' "	m s	h m s
Wed.	1	14 23 38.69	S. 14 16 20.4	16 8.72	16 18.73	14 39 57.42
Thur.	2	14 27 33.67	14 35 34.5	16 8.97	16 20.30	14 43 53.97
Frid.	3	14 31 29.45	14 54 34.5	16 9.22	16 21.07	14 47 50.52
Sat.	4	14 35 26.04	15 13 19.8	16 9.47	16 21.04	14 51 47.08
Sun.	5	14 39 23.44	15 31 50.1	16 9.71	16 20.19	14 55 43.63
Mon.	6	14 43 21.67	15 50 5.1	16 9.95	16 18.52	14 59 40.19
Tues.	7	14 47 20.74	16 8 4.3	16 10.19	16 16.00	15 3 36.74
Wed.	8	14 51 20.65	16 25 47.3	16 10.42	16 12.64	15 7 33.30
Thur.	9	14 55 21.42	16 43 13.8	16 10.65	16 8.43	15 11 29.85
Frid.	10	14 59 23.06	17 0 23.3	16 10.87	16 3.35	15 15 26.40
Sat.	11	15 3 25.55	17 17 15.5	16 11.09	15 57.40	15 19 22.96
Sun.	12	15 7 28.92	17 33 50.0	16 11.31	15 50.59	15 23 19.51
Mon.	13	15 11 33.16	17 50 6.3	16 11.53	15 42.91	15 27 16.07
Tues.	14	15 15 38.26	18 6 4.1	16 11.74	15 34.36	15 31 12.62
Wed.	15	15 19 44.24	18 21 42.9	16 11.95	15 24.94	15 35 9.18
Thur.	16	15 23 51.08	18 37 2.4	16 12.16	15 14.66	15 39 5.73
Frid.	17	15 27 58.77	18 52 2.2	16 12.36	15 3.52	15 43 2.29
Sat.	18	15 32 7.30	19 6 41.9	16 12.57	14 51.54	15 46 58.84
Sun.	19	15 36 16.67	19 21 1.1	16 12.77	14 38.73	15 50 55.40
Mon.	20	15 40 26.87	19 34 59.4	16 12.97	14 25.09	15 54 51.96
Tues.	21	15 44 37.87	19 48 36.3	16 13.17	14 10.64	15 58 48.51
Wed.	22	15 48 49.67	20 1 51.6	16 13.37	13 55.40	16 2 45.07
Thur.	23	15 53 2.25	20 14 44.9	16 13.56	13 39.38	16 6 41.62
Frid.	24	15 57 15.60	20 27 15.8	16 13.75	13 22.58	16 10 38.18
Sat.	25	16 1 29.70	20 39 23.9	16 13.94	13 5.04	16 14 34.74
Sun.	26	16 5 44.54	20 51 8.9	16 14.12	12 46.75	16 18 31.29
Mon.	27	16 10 0.11	21 2 30.5	16 14.30	12 27.73	16 22 27.85
Tues.	28	16 14 16.40	21 13 28.4	16 14.47	12 8.01	16 26 24.40
Wed.	29	16 18 33.38	21 24 2.1	16 14.64	11 47.59	16 30 20.96
Thur.	30	16 22 51.03	21 34 11.5	16 14.81	11 26.48	16 34 17.52
Frid.	31	16 27 9.35	S. 21 43 56.3	16 14.97	11 4.72	16 38 14.07

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
				h m s				
1	218° 17' 9.4	N. 0° 08	9.9966058	9 18 30.83	14 45.34	14 45.93	54 3.66	54 5.84
2	219 17 12.7	S. 0° 04	.9964925	9 14 34.93	14 46.96	14 48.38	54 9.60	54 14.81
3	220 17 17.8	0° 16	.9963806	9 10 39.02	14 50.16	14 52.26	54 21.32	54 29.01
4	221 17 24.6	0° 27	9.9962703	9 6 43.11	14 54.65	14 57.30	54 37.77	54 47.48
5	222 17 33.2	0° 35	.9961616	9 2 47.20	15 0.19	15 3.30	54 58.07	55 9.45
6	223 17 43.7	0° 42	.9960546	8 58 51.29	15 6.62	15 10.14	55 21.61	55 34.49
7	224 17 56.1	0° 45	9.9959492	8 54 55.38	15 13.84	15 17.73	55 48.07	56 2.36
8	225 18 10.3	0° 47	.9958455	8 50 59.48	15 21.83	15 26.11	56 17.35	56 33.04
9	226 18 26.5	0° 44	.9957435	8 47 3.57	15 30.58	15 35.24	56 49.42	57 6.47
10	227 18 44.7	0° 39	9.9956430	8 43 7.66	15 40.06	15 45.03	57 24.14	57 42.34
11	228 19 4.9	0° 31	.9955441	8 39 11.75	15 50.11	15 55.25	58 0.94	58 19.80
12	229 19 27.0	0° 20	.9954465	8 35 15.84	16 0.39	16 5.47	58 38.66	58 57.27
13	230 19 51.1	S. 0° 07	9.9953503	8 31 19.93	16 10.39	16 15.04	59 15.28	59 32.30
14	231 20 17.2	N. 0° 06	.9952553	8 27 24.02	16 19.28	16 23.03	59 47.88	60 1.61
15	232 20 45.2	0° 21	.9951613	8 23 28.11	16 26.14	16 28.49	60 12.99	60 21.60
16	233 21 15.0	0° 34	9.9950684	8 19 32.20	16 29.96	16 30.48	60 27.00	60 28.91
17	234 21 46.5	0° 46	.9949764	8 15 36.30	16 29.98	16 28.43	60 27.08	60 21.40
18	235 22 19.8	0° 57	.9948852	8 11 40.39	16 25.84	16 22.25	60 11.92	59 58.76
19	236 22 54.6	0° 64	9.9947948	8 7 44.48	16 17.75	16 12.43	59 42.23	59 22.75
20	237 23 30.9	0° 69	.9947053	8 3 48.57	16 6.43	15 59.91	59 0.77	58 36.88
21	238 24 8.6	0° 72	.9946168	7 59 52.66	15 53.01	15 45.93	58 11.63	57 45.65
22	239 24 47.5	0° 70	9.9945293	7 55 56.75	15 38.79	15 31.75	57 19.50	56 53.70
23	240 25 27.6	0° 65	.9944431	7 52 0.84	15 24.94	15 18.49	56 28.75	56 5.12
24	241 26 8.9	0° 58	.9943582	7 48 4.93	15 12.49	15 7.01	55 43.11	55 23.05
25	242 26 51.3	0° 50	9.9942748	7 44 9.02	15 2.14	14 57.91	55 5.19	54 49.71
26	243 27 34.8	0° 41	.9941930	7 40 13.11	14 54.36	14 51.51	54 36.71	54 26.27
27	244 28 19.3	0° 29	.9941130	7 36 17.20	14 49.37	14 47.94	54 18.43	54 13.17
28	245 29 4.8	0° 17	9.9940349	7 32 21.29	14 47.20	14 47.12	54 10.46	54 10.19
29	246 29 51.4	N. 0° 06	.9939588	7 28 25.38	14 47.68	14 48.84	54 12.24	54 16.49
30	247 30 38.9	S. 0° 06	.9938849	7 24 29.47	14 50.55	14 52.76	54 22.74	54 30.85
31	248 31 27.5	S. 0° 16	9.9938131	7 20 33.55	14 55.42	14 58.47	54 40.60	54 51.75

## MEAN TIME.

THE MOON'S							
Day.	Longitude.		Latitude.		Age.	Meridian Passage.	
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.
	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	S. <sup>°</sup> <sup>'</sup> <sup>"</sup>	S. <sup>°</sup> <sup>'</sup> <sup>"</sup>	d	h m	h m
1	2 25 10.2	8 19 24.6	S. 0 16 42.4	S. 0 48 42.3	11.93	9 46.1	22 7.4
2	14 14 44.2	20 11 29.6	1 20 14.1	1 50 58.7	12.93	10 28.9	22 50.6
3	26 9 59.4	32 10 29.1	2 20 36.5	2 48 48.0	13.93	11 12.7	23 35.1
4	38 13 11.9	44 18 18.6	3 15 13.7	3 39 34.5	14.93	11 58.0	* *
5	50 25 58.1	56 36 17.4	4 1 31.8	4 20 47.7	15.93	12 45.1	0 21.3
6	62 49 22.0	69 5 16.9	4 37 6.0	4 50 11.2	16.93	13 34.2	1 9.4
7	75 24 6.1	81 45 53.7	4 59 50.1	5 5 51.1	17.93	14 24.9	1 59.3
8	88 10 43.9	94 38 41.7	5 8 4.8	5 6 24.4	18.93	15 16.9	2 50.8
9	101 9 52.8	107 44 23.9	5 0 45.5	4 51 6.7	19.93	16 9.6	3 43.2
10	114 22 22.1	121 3 55.8	4 37 29.2	4 19 57.5	20.93	17 2.5	4 36.1
11	127 49 13.4	134 38 22.8	3 58 39.4	3 33 46.4	21.93	17 55.4	5 29.0
12	141 31 31.2	148 28 43.8	3 5 33.5	2 34 19.8	22.93	18 48.0	6 21.7
13	155 30 2.6	162 35 25.8	2 0 28.7	1 24 27.3	23.93	19 40.7	7 14.3
14	169 44 46.3	176 57 50.7	S. 0 46 47.6	S. 0 8 5.0	24.93	20 33.8	8 7.2
15	184 14 18.2	191 33 40.5	N. 0 31 1.6	N. 1 9 50.7	25.93	21 27.9	9 0.7
16	198 55 21.0	206 18 35.3	1 47 39.4	2 23 44.7	26.93	22 23.3	9 55.4
17	213 42 32.2	221 6 15.3	2 57 25.3	3 28 2.9	27.93	23 20.0	10 51.5
18	228 28 44.9	235 49 0.0	3 55 3.9	4 18 0.8	28.93	* *	11 48.8
19	243 6 1.6	250 18 54.4	4 36 33.3	4 50 28.1	0.50	0 17.7	12 46.6
20	257 26 50.2	264 29 8.3	4 59 39.5	5 4 8.7	1.50	1 15.4	13 44.0
21	271 25 18.1	278 14 59.2	5 4 3.2	4 59 35.2	2.50	2 12.1	14 39.7
22	284 58 1.6	291 34 25.1	4 51 0.9	4 38 39.5	3.50	3 6.6	15 32.9
23	298 4 18.7	304 27 59.8	4 22 51.6	4 3 58.9	4.50	3 58.4	16 23.2
24	310 45 52.7	316 58 27.1	3 42 23.1	3 18 25.6	5.50	4 47.3	17 10.7
25	323 6 17.6	329 10 1.9	2 52 27.4	2 24 48.4	6.50	5 33.5	17 55.8
26	335 10 19.8	341 7 52.6	1 55 47.9	1 25 44.4	7.50	6 17.7	18 39.2
27	347 3 22.5	352 57 30.8	N. 0 54 55.8	N. 0 23 39.5	8.50	7 0.5	19 21.7
28	358 50 58.5	4 44 24.9	S. 0 7 47.2	S. 0 39 7.3	9.50	7 42.7	20 3.8
29	10 38 27.3	16 33 41.0	1 10 3.4	1 40 18.1	10.50	8 25.1	20 46.6
30	22 30 38.1	28 29 47.0	2 9 33.6	2 37 31.4	11.50	9 8.3	21 30.5
31	34 31 33.1	40 36 17.5	S. 3 3 53.2	S. 3 28 20.1	12.50	9 53.1	22 16.1

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>WEDNESDAY 1.</b>					<b>FRIDAY 3.</b>				
	h m s	s	N. ° ' " "	" "		h m s	s	N. ° ' " "	" "
0	0 9 19.35	18.748	N. 0 42 25.2	92.66	0	1 40 29.34	19.376	N. 7 55 15.0	85.40
1	0 11 11.85	18.752	0 51 41.1	92.64	1	1 42 25.66	19.398	8 3 46.5	85.09
2	0 13 4.38	18.757	1 0 56.9	92.63	2	1 44 22.11	19.419	8 12 16.1	84.79
3	0 14 56.93	18.762	1 10 12.6	92.60	3	1 46 18.69	19.441	8 20 44.0	84.48
4	0 16 49.52	18.768	1 19 28.1	92.57	4	1 48 15.40	19.463	8 29 9.9	84.15
5	0 18 42.14	18.773	1 28 43.4	92.53	5	1 50 12.25	19.486	8 37 33.8	83.83
6	0 20 34.80	18.779	1 37 58.4	92.48	6	1 52 9.23	19.508	8 45 55.8	83.50
7	0 22 27.49	18.786	1 47 13.2	92.44	7	1 54 6.35	19.532	8 54 15.8	83.16
8	0 24 20.23	18.793	1 56 27.7	92.38	8	1 56 3.61	19.555	9 2 33.7	82.81
9	0 26 13.01	18.801	2 5 41.8	92.33	9	1 58 1.01	19.578	9 10 49.5	82.46
10	0 28 5.84	18.808	2 14 55.6	92.27	10	1 59 58.55	19.602	9 19 3.2	82.10
11	0 29 58.71	18.817	2 24 9.0	92.19	11	2 1 56.23	19.626	9 27 14.7	81.73
12	0 31 51.64	18.826	2 33 21.9	92.11	12	2 3 54.06	19.650	9 35 24.0	81.36
13	0 33 44.62	18.834	2 42 34.3	92.03	13	2 5 52.03	19.675	9 43 31.0	80.98
14	0 35 37.65	18.843	2 51 46.3	91.95	14	2 7 50.16	19.700	9 51 35.7	80.59
15	0 37 30.74	18.853	3 0 57.7	91.85	15	2 9 48.43	19.724	9 59 38.1	80.21
16	0 39 23.89	18.864	3 10 8.5	91.75	16	2 11 46.85	19.750	10 7 38.2	79.81
17	0 41 17.11	18.875	3 19 18.7	91.64	17	2 13 45.43	19.776	10 15 35.8	79.39
18	0 43 10.39	18.885	3 28 28.2	91.53	18	2 15 44.16	19.801	10 23 30.9	78.98
19	0 45 3.73	18.897	3 37 37.1	91.42	19	2 17 43.04	19.827	10 31 23.6	78.57
20	0 46 57.15	18.908	3 46 45.2	91.29	20	2 19 42.08	19.853	10 39 13.7	78.14
21	0 48 50.63	18.920	3 55 52.6	91.17	21	2 21 41.28	19.879	10 47 1.3	77.71
22	0 50 44.19	18.933	4 4 59.2	91.03	22	2 23 40.63	19.906	10 54 46.2	77.27
23	0 52 37.82	18.946	N. 4 14 5.0	90.89	23	2 25 40.15	19.933	N. 11 2 28.5	76.83
<b>THURSDAY 2.</b>					<b>SATURDAY 4.</b>				
	h m s	s	N. ° ' " "	" "		h m s	s	N. ° ' " "	" "
0	0 54 31.54	18.959	N. 4 23 9.9	90.74	0	2 27 39.83	19.960	N. 11 10 8.1	76.38
1	0 56 25.33	18.972	4 32 13.9	90.59	1	2 29 39.67	19.987	11 17 45.0	75.92
2	0 58 19.20	18.986	4 41 17.0	90.43	2	2 31 39.67	20.014	11 25 19.1	75.45
3	1 0 13.16	19.000	4 50 19.1	90.27	3	2 33 39.84	20.042	11 32 50.4	74.98
4	1 2 7.20	19.014	4 59 20.2	90.10	4	2 35 40.17	20.069	11 40 18.8	74.49
5	1 4 1.33	19.030	5 8 20.3	89.92	5	2 37 40.67	20.097	11 47 44.3	74.01
6	1 5 55.56	19.045	5 17 19.3	89.73	6	2 39 41.33	20.125	11 55 6.9	73.52
7	1 7 49.87	19.060	5 26 17.1	89.55	7	2 41 42.17	20.153	12 2 26.5	73.02
8	1 9 44.28	19.077	5 35 13.9	89.36	8	2 43 43.17	20.181	12 9 43.1	72.52
9	1 11 38.79	19.093	5 44 9.4	89.15	9	2 45 44.34	20.209	12 16 56.7	72.00
10	1 13 33.40	19.109	5 53 3.7	88.95	10	2 47 45.68	20.238	12 24 7.1	71.48
11	1 15 28.10	19.126	6 1 56.8	88.73	11	2 49 47.20	20.268	12 31 14.4	70.95
12	1 17 22.91	19.143	6 10 48.5	88.52	12	2 51 48.89	20.296	12 38 18.5	70.42
13	1 19 17.82	19.161	6 19 39.0	88.29	13	2 53 50.75	20.325	12 45 19.4	69.88
14	1 21 12.84	19.179	6 28 28.0	88.06	14	2 55 52.79	20.354	12 52 17.0	69.33
15	1 23 7.97	19.198	6 37 15.7	87.83	15	2 57 55.00	20.383	12 59 11.3	68.78
16	1 25 3.21	19.216	6 46 1.9	87.58	16	2 59 57.38	20.412	13 6 2.3	68.22
17	1 26 58.56	19.235	6 54 46.6	87.33	17	3 1 59.94	20.442	13 12 49.9	67.65
18	1 28 54.03	19.255	7 3 29.8	87.07	18	3 4 2.68	20.472	13 19 34.1	67.08
19	1 30 49.62	19.274	7 12 11.4	86.81	19	3 6 5.60	20.501	13 26 14.8	66.49
20	1 32 45.32	19.293	7 20 51.5	86.54	20	3 8 8.69	20.531	13 32 52.0	65.91
21	1 34 41.14	19.313	7 29 29.9	86.27	21	3 10 11.97	20.561	13 39 25.7	65.32
22	1 36 37.08	19.334	7 38 6.7	85.98	22	3 12 15.42	20.589	13 45 55.8	64.71
23	1 38 33.15	19.355	7 46 41.7	85.69	23	3 14 19.04	20.619	13 52 22.2	64.10
24	1 40 29.34	19.376	N. 7 55 15.0	85.40	24	3 16 22.85	20.650	N. 13 58 45.0	63.49

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.	Hour.	Right Ascension.	Var. in rom.	Declination.	Var. in rom.
<b>SUNDAY 5.</b>					<b>TUESDAY 7.</b>				
	<b>h m s</b>	<b>s</b>	<b>N. 13 58 45.0</b>	<b>63.49</b>		<b>h m s</b>	<b>s</b>	<b>N. 17 40 41.9</b>	<b>26.72</b>
0	3 16 22.85	20.650			0	4 58 52.93	22.016		
1	3 18 26.84	20.679	14 5 4.1	62.88	1	5 1 5.10	22.040	17 43 19.5	25.81
2	3 20 31.00	20.709	14 11 19.5	62.25	2	5 3 17.41	22.064	17 45 51.6	24.91
3	3 22 35.35	20.739	14 17 31.1	61.61	3	5 5 29.87	22.088	17 48 18.4	24.00
4	3 24 39.87	20.769	14 23 38.8	60.97	4	5 7 42.47	22.112	17 50 39.6	23.08
5	3 26 44.58	20.799	14 29 42.7	60.33	5	5 9 55.21	22.135	17 52 55.4	22.17
6	3 28 49.46	20.829	14 35 42.7	59.68	6	5 12 8.09	22.158	17 55 5.6	21.24
7	3 30 54.53	20.860	14 41 38.8	59.01	7	5 14 21.10	22.180	17 57 10.3	20.32
8	3 32 59.78	20.890	14 47 30.8	58.34	8	5 16 34.25	22.203	17 59 9.4	19.38
9	3 35 5.21	20.920	14 53 18.9	57.67	9	5 18 47.54	22.225	18 1 2.9	18.46
10	3 37 10.82	20.949	14 59 2.9	56.99	10	5 21 0.95	22.247	18 2 50.9	17.52
11	3 39 16.60	20.979	15 4 42.8	56.30	11	5 23 14.50	22.268	18 4 33.1	16.57
12	3 41 22.57	21.010	15 10 18.5	55.61	12	5 25 28.17	22.289	18 6 9.7	15.63
13	3 43 28.72	21.039	15 15 50.1	54.92	13	5 27 41.97	22.310	18 7 40.7	14.68
14	3 45 35.04	21.069	15 21 17.5	54.21	14	5 29 55.89	22.331	18 9 5.9	13.73
15	3 47 41.55	21.100	15 26 40.6	53.49	15	5 32 9.94	22.351	18 10 25.4	12.77
16	3 49 48.24	21.129	15 31 59.4	52.77	16	5 34 24.10	22.370	18 11 39.1	11.81
17	3 51 55.10	21.159	15 37 13.9	52.05	17	5 36 38.38	22.390	18 12 47.1	10.85
18	3 54 2.15	21.189	15 42 24.0	51.32	18	5 38 52.78	22.409	18 13 49.3	9.88
19	3 56 9.37	21.218	15 47 29.7	50.58	19	5 41 7.29	22.428	18 14 45.7	8.92
20	3 58 16.77	21.248	15 52 31.0	49.84	20	5 43 21.92	22.447	18 15 36.3	7.94
21	4 0 24.35	21.278	15 57 27.8	49.09	21	5 45 36.65	22.464	18 16 21.0	6.97
22	4 2 32.10	21.307	16 2 20.1	48.34	22	5 47 51.49	22.483	18 16 59.9	5.99
23	4 4 40.03	21.337	N. 16 7 7.9	47.58	23	5 50 6.44	22.500	N. 18 17 32.9	5.01
<b>MONDAY 6.</b>					<b>WEDNESDAY 8.</b>				
	<b>h m s</b>	<b>s</b>	<b>N. 16 11 51.1</b>	<b>46.81</b>		<b>h m s</b>	<b>s</b>	<b>N. 18 18 0.0</b>	<b>4.03</b>
0	4 6 48.14	21.366			0	5 52 21.49	22.517		
1	4 8 56.42	21.394	16 16 29.6	46.03	1	5 54 36.64	22.533	18 18 21.2	3.04
2	4 11 4.87	21.423	16 21 3.5	45.26	2	5 56 51.89	22.550	18 18 36.5	2.06
3	4 13 13.50	21.452	16 25 32.7	44.47	3	5 59 7.24	22.566	18 18 45.9	1.07
4	4 15 22.30	21.481	16 29 57.1	43.68	4	6 1 22.68	22.581	18 18 49.3	0.07
5	4 17 31.27	21.509	16 34 16.8	42.88	5	6 3 38.21	22.597	18 18 46.7	0.93
6	4 19 40.41	21.538	16 38 31.7	42.08	6	6 5 53.84	22.612	18 18 38.2	1.92
7	4 21 49.72	21.566	16 42 41.8	41.28	7	6 8 9.55	22.626	18 18 23.7	2.92
8	4 23 59.20	21.594	16 46 47.0	40.46	8	6 10 25.35	22.640	18 18 3.2	3.92
9	4 26 8.85	21.622	16 50 47.3	39.64	9	6 12 41.23	22.654	18 17 36.7	4.92
10	4 28 18.67	21.650	16 54 42.7	38.82	10	6 14 57.20	22.668	18 17 4.2	5.92
11	4 30 28.65	21.678	16 58 33.1	37.98	11	6 17 13.25	22.681	18 16 25.7	6.93
12	4 32 38.80	21.704	17 2 18.5	37.14	12	6 19 29.37	22.693	18 15 41.1	7.93
13	4 34 49.10	21.731	17 5 58.8	36.30	13	6 21 45.57	22.706	18 14 50.5	8.93
14	4 36 59.57	21.759	17 9 34.1	35.46	14	6 24 1.84	22.718	18 13 53.9	9.94
15	4 39 10.21	21.786	17 13 4.3	34.61	15	6 26 18.19	22.730	18 12 51.2	10.96
16	4 41 21.00	21.812	17 16 29.4	33.76	16	6 28 34.60	22.741	18 11 42.4	11.97
17	4 43 31.95	21.838	17 19 49.4	32.89	17	6 30 51.08	22.752	18 10 27.6	12.98
18	4 45 43.06	21.864	17 23 4.1	32.02	18	6 33 7.62	22.762	18 9 6.7	13.98
19	4 47 54.32	21.890	17 26 13.6	31.15	19	6 35 24.22	22.773	18 7 39.8	15.00
20	4 50 5.74	21.916	17 29 17.9	30.27	20	6 37 40.88	22.783	18 6 6.7	16.02
21	4 52 17.31	21.941	17 32 16.9	29.38	21	6 39 57.61	22.792	18 4 27.6	17.03
22	4 54 29.03	21.967	17 35 10.5	28.50	22	6 42 14.39	22.801	18 2 42.4	18.03
23	4 56 40.91	21.992	17 37 58.9	27.62	23	6 44 31.22	22.809	18 0 51.2	19.05
24	4 58 52.93	22.016	N. 17 40 41.9	26.72	24	6 46 48.10	22.818	N. 17 58 53.8	20.07

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 9.</b>					<b>SATURDAY 11.</b>				
0	h m s 6 46 48.10	22.818	N.17 58 53.8	20.07	0	h m s 8 36 43.20	22.890	N.14 28 21.2	66.64
1	6 49 5.03	22.826	17 56 50.4	21.08	1	8 39 0.53	22.887	14 21 38.7	67.53
2	6 51 22.01	22.834	17 54 40.9	22.09	2	8 41 17.84	22.883	14 14 50.8	68.42
3	6 53 39.04	22.842	17 52 25.3	23.10	3	8 43 35.13	22.880	14 7 57.7	69.28
4	6 55 56.11	22.848	17 50 3.7	24.12	4	8 45 52.40	22.878	14 0 59.4	70.15
5	6 58 13.22	22.854	17 47 35.9	25.13	5	8 48 9.66	22.874	13 53 55.9	71.02
6	7 0 30.36	22.861	17 45 2.1	26.13	6	8 50 26.89	22.871	13 46 47.2	71.88
7	7 2 47.55	22.868	17 42 22.3	27.15	7	8 52 44.11	22.867	13 39 33.4	72.73
8	7 5 4.77	22.873	17 39 36.3	28.17	8	8 55 1.30	22.863	13 32 14.5	73.58
9	7 7 22.02	22.878	17 36 44.3	29.17	9	8 57 18.47	22.861	13 24 50.5	74.42
10	7 9 39.31	22.884	17 33 46.3	30.18	10	8 59 35.63	22.858	13 17 21.5	75.25
11	7 11 56.63	22.888	17 30 42.2	31.18	11	9 1 52.76	22.854	13 9 47.5	76.08
12	7 14 13.97	22.892	17 27 32.1	32.18	12	9 4 9.88	22.851	13 2 8.6	76.89
13	7 16 31.33	22.896	17 24 16.0	33.19	13	9 6 26.97	22.847	12 54 24.8	77.72
14	7 18 48.72	22.900	17 20 53.8	34.20	14	9 8 44.04	22.843	12 46 36.0	78.53
15	7 21 6.13	22.904	17 17 25.6	35.20	15	9 11 1.09	22.841	12 38 42.5	79.33
16	7 23 23.57	22.907	17 13 51.4	36.19	16	9 13 18.13	22.837	12 30 44.1	80.13
17	7 25 41.02	22.910	17 10 11.3	37.19	17	9 15 35.14	22.833	12 22 41.0	80.91
18	7 27 58.49	22.912	17 6 25.1	38.19	18	9 17 52.13	22.831	12 14 33.2	81.69
19	7 30 15.97	22.914	17 2 33.0	39.18	19	9 20 9.11	22.828	12 6 20.7	82.47
20	7 32 33.46	22.917	16 58 34.9	40.18	20	9 22 26.07	22.825	11 58 3.6	83.24
21	7 34 50.97	22.919	16 54 30.9	41.16	21	9 24 43.01	22.822	11 49 41.8	84.01
22	7 37 8.49	22.921	16 50 21.0	42.15	22	9 26 59.93	22.818	11 41 15.5	84.76
23	7 39 26.02	22.922	N.16 46 5.1	43.14	23	9 29 16.83	22.816	N.11 32 44.7	85.51
<b>FRIDAY 10.</b>					<b>SUNDAY 12.</b>				
0	7 41 43.55	22.923	N.16 41 43.3	44.12	0	9 31 33.72	22.813	N.11 24 9.4	86.25
1	7 44 1.09	22.923	16 37 15.7	45.09	1	9 33 50.59	22.811	11 15 29.7	86.98
2	7 46 18.63	22.924	16 32 42.2	46.07	2	9 36 7.45	22.808	11 6 45.6	87.71
3	7 48 36.18	22.924	16 28 2.8	47.05	3	9 38 24.29	22.806	10 57 57.2	88.43
4	7 50 53.72	22.924	16 23 17.6	48.02	4	9 40 41.12	22.804	10 49 4.5	89.14
5	7 53 11.27	22.925	16 18 26.6	48.98	5	9 42 57.94	22.802	10 40 7.5	89.85
6	7 55 28.82	22.924	16 13 29.8	49.95	6	9 45 14.74	22.799	10 31 6.3	90.54
7	7 57 46.36	22.923	16 8 27.2	50.91	7	9 47 31.53	22.798	10 22 1.0	91.23
8	8 0 3.90	22.923	16 3 18.9	51.87	8	9 49 48.31	22.796	10 12 51.6	91.91
9	8 2 21.44	22.923	15 58 4.8	52.83	9	9 52 5.08	22.794	10 3 38.1	92.58
10	8 4 38.97	22.921	15 52 45.0	53.78	10	9 54 21.84	22.793	9 54 20.7	93.24
11	8 6 56.49	22.919	15 47 19.5	54.72	11	9 56 38.59	22.792	9 44 59.2	93.91
12	8 9 14.00	22.918	15 41 48.4	55.66	12	9 58 55.34	22.791	9 35 33.8	94.55
13	8 11 31.50	22.917	15 36 11.6	56.60	13	10 1 12.08	22.790	9 26 4.6	95.18
14	8 13 49.00	22.915	15 30 29.2	57.54	14	10 3 28.82	22.789	9 16 31.6	95.82
15	8 16 6.48	22.913	15 24 41.1	58.47	15	10 5 45.55	22.788	9 6 54.8	96.44
16	8 18 23.95	22.911	15 18 47.5	59.39	16	10 8 2.28	22.788	8 57 14.3	97.05
17	8 20 41.41	22.909	15 12 48.4	60.32	17	10 10 19.01	22.788	8 47 30.2	97.65
18	8 22 58.86	22.907	15 6 43.7	61.24	18	10 12 35.74	22.788	8 37 42.5	98.25
19	8 25 16.29	22.903	15 0 33.5	62.15	19	10 14 52.47	22.788	8 27 51.2	98.84
20	8 27 33.70	22.901	14 54 17.9	63.06	20	10 17 9.20	22.789	8 17 56.4	99.42
21	8 29 51.10	22.898	14 47 56.8	63.97	21	10 19 25.94	22.790	8 7 58.2	99.98
22	8 32 8.48	22.896	14 41 30.3	64.87	22	10 21 42.68	22.791	7 57 56.6	100.54
23	8 34 25.85	22.893	14 34 58.4	65.76	23	10 23 59.43	22.792	7 47 51.7	101.09
24	8 36 43.20	22.890	N.14 28 21.2	66.64	24	10 26 16.18	22.793	N. 7 37 43.5	101.63

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	
MONDAY 13.					WEDNESDAY 15.					
	h m s	s	N. ° ' "	"		h m s	s	S. ° ' "	"	
0	10 26 16	18	22 793	N. 7 37 43	5	12 16 22	77	23 202	S. 1 12 37	8
1	10 28 32	95	22 796	7 27 32	1	12 18 42	03	23 218	1 24 7	6
2	10 30 49	73	22 798	7 17 15	2	12 21 1	38	23 233	1 35 37	3
3	10 33 6	52	22 799	7 6 59	3	12 23 20	82	23 249	1 47 6	7
4	10 35 23	32	22 802	6 56 39	4	12 25 40	37	23 267	1 58 35	8
5	10 37 40	14	22 805	6 46 15	5	12 28 0	02	23 283	2 10 4	6
6	10 39 56	98	22 808	6 35 48	6	12 30 19	77	23 300	2 21 32	9
7	10 42 13	83	22 811	6 25 19	7	12 32 39	62	23 318	2 33 0	6
8	10 44 30	71	22 815	6 14 47	8	12 34 59	58	23 335	2 44 27	8
9	10 46 47	61	22 818	6 4 12	9	12 37 19	64	23 353	2 55 54	2
10	10 49 4	53	22 822	5 53 34	10	12 39 39	82	23 372	3 7 19	9
11	10 51 21	47	22 827	5 42 53	11	12 42 0	10	23 390	3 18 44	7
12	10 53 38	45	22 832	5 32 11	12	12 44 20	50	23 409	3 30 8	6
13	10 55 55	45	22 836	5 21 25	13	12 46 41	01	23 428	3 41 31	4
14	10 58 12	48	22 842	5 10 37	14	12 49 1	63	23 446	3 52 53	1
15	11 0 29	55	22 846	4 59 47	15	12 51 22	36	23 466	4 4 13	7
16	11 2 46	65	22 852	4 48 55	16	12 53 43	22	23 486	4 15 33	0
17	11 5 3	78	22 859	4 38 0	17	12 56 4	19	23 505	4 26 50	9
18	11 7 20	96	22 866	4 27 3	18	12 58 25	28	23 525	4 38 7	4
19	11 9 38	17	22 872	4 16 4	19	13 0 46	49	23 545	4 49 22	4
20	11 11 55	42	22 879	4 5 3	20	13 3 7	82	23 566	5 0 35	8
21	11 14 12	72	22 887	3 53 59	21	13 5 29	28	23 586	5 11 47	5
22	11 16 30	06	22 894	3 42 54	22	13 7 50	85	23 606	5 22 57	4
23	11 18 47	45	22 902	3 31 48	23	13 10 12	55	23 627	5 34 5	5
TUESDAY 14.					THURSDAY 16.					
	h m s	s	N. ° ' "	"		h m s	s	S. ° ' "	"	
0	11 21 4	89	22 910	N. 3 20 39	3	13 12 34	38	23 648	S. 5 45 11	7
1	11 23 22	37	22 918	3 9 28	4	13 14 56	33	23 668	5 56 15	8
2	11 25 39	91	22 928	2 58 16	5	13 17 18	40	23 690	6 7 17	9
3	11 27 57	50	22 937	2 47 3	6	13 19 40	61	23 712	6 18 17	8
4	11 30 15	15	22 947	2 35 48	7	13 22 2	94	23 733	6 29 15	4
5	11 32 32	86	22 957	2 24 31	8	13 24 25	40	23 754	6 40 10	7
6	11 34 50	63	22 967	2 13 13	9	13 26 47	99	23 776	6 51 3	5
7	11 37 8	46	22 977	2 1 54	10	13 29 10	71	23 798	7 1 53	8
8	11 39 26	35	22 987	1 50 34	11	13 31 33	57	23 820	7 12 41	6
9	11 41 44	30	22 998	1 39 12	12	13 33 56	55	23 841	7 23 26	7
10	11 44 2	33	23 010	1 27 50	13	13 36 19	66	23 863	7 34 9	0
11	11 46 20	42	23 022	1 16 26	14	13 38 42	90	23 885	7 44 48	5
12	11 48 38	59	23 034	1 5 2	15	13 41 6	28	23 907	7 55 25	0
13	11 50 56	83	23 046	0 53 36	16	13 43 29	78	23 928	8 5 58	6
14	11 53 15	14	23 058	0 42 10	17	13 45 53	42	23 951	8 16 29	0
15	11 55 33	53	23 071	0 30 43	18	13 48 17	19	23 973	8 26 56	3
16	11 57 51	99	23 084	0 19 16	19	13 50 41	09	23 994	8 37 20	4
17	12 0 10	54	23 098	0 7 47	20	13 53 5	12	24 017	8 47 41	1
18	12 2 29	17	23 113	0 3 40	21	13 55 29	29	24 038	8 57 58	4
19	12 4 47	89	23 127	0 15 9	22	13 57 53	58	24 060	9 8 12	2
20	12 7 6	69	23 140	0 26 38	23	14 0 18	01	24 082	9 18 22	5
21	12 9 25	57	23 155	0 38 8	24	14 2 42	57	24 103	9 28 29	1
22	12 11 44	55	23 170	0 49 38	25	14 5 7	25	24 125	9 38 31	9
23	12 14 3	61	23 185	1 1 8	26	14 7 32	07	24 147	9 48 31	0
24	12 16 22	77	23 202	S. 1 12 37	27	14 9 57	01	24 168	S. 9 58 26	2

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>FRIDAY 17.</b>					<b>SUNDAY 19.</b>				
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>
0	14 9 57.01	24.168	S. 9 58 26.2	98.87	0	16 7 55.65	24.829	S. 16 15 30.6	54.47
1	14 12 22.09	24.190	10 8 17.4	98.20	1	16 10 24.63	24.830	16 20 54.0	53.33
2	14 14 47.29	24.211	10 18 4.6	97.52	2	16 12 53.61	24.830	16 26 10.6	52.20
3	14 17 12.62	24.232	10 27 47.6	96.83	3	16 15 22.59	24.830	16 31 20.4	51.06
4	14 19 38.07	24.253	10 37 26.5	96.12	4	16 17 51.57	24.830	16 36 23.3	49.92
5	14 22 3.65	24.274	10 47 1.1	95.40	5	16 20 20.55	24.828	16 41 19.4	48.77
6	14 24 29.36	24.294	10 56 31.3	94.67	6	16 22 49.51	24.825	16 46 8.5	47.61
7	14 26 55.18	24.314	11 5 57.1	93.93	7	16 25 18.45	24.822	16 50 50.7	46.46
8	14 29 21.13	24.335	11 15 18.4	93.18	8	16 27 47.38	24.819	16 55 26.0	45.30
9	14 31 47.20	24.354	11 24 35.2	92.41	9	16 30 16.28	24.815	16 59 54.3	44.13
10	14 34 13.38	24.374	11 33 47.3	91.63	10	16 32 45.16	24.810	17 4 15.6	42.97
11	14 36 39.69	24.394	11 42 54.7	90.83	11	16 35 14.00	24.804	17 8 29.9	41.80
12	14 39 6.11	24.413	11 51 57.3	90.03	12	16 37 42.81	24.798	17 12 37.2	40.63
13	14 41 32.64	24.432	12 0 55.1	89.22	13	16 40 11.57	24.790	17 16 37.4	39.45
14	14 43 59.29	24.451	12 9 47.9	88.39	14	16 42 40.29	24.783	17 20 30.6	38.28
15	14 46 26.05	24.469	12 18 35.8	87.55	15	16 45 8.96	24.774	17 24 16.7	37.09
16	14 48 52.92	24.487	12 27 18.5	86.70	16	16 47 37.58	24.764	17 27 55.7	35.91
17	14 51 19.89	24.504	12 35 56.2	85.84	17	16 50 6.13	24.753	17 31 27.6	34.73
18	14 53 46.97	24.522	12 44 28.6	84.97	18	16 52 34.62	24.743	17 34 52.4	33.54
19	14 56 14.16	24.539	12 52 55.8	84.08	19	16 55 3.05	24.732	17 38 10.1	32.36
20	14 58 41.44	24.556	13 1 17.6	83.19	20	16 57 31.40	24.718	17 41 20.7	31.17
21	15 1 8.83	24.573	13 9 34.1	82.28	21	16 59 59.67	24.705	17 44 24.1	29.98
22	15 3 36.31	24.588	13 17 45.0	81.37	22	17 2 27.86	24.692	17 47 20.4	28.79
23	15 6 3.88	24.603	S. 13 25 50.5	80.45	23	17 4 55.97	24.678	S. 17 50 9.6	27.60
<b>SATURDAY 18.</b>					<b>MONDAY 20.</b>				
	<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>		<i>h m s</i>	<i>s</i>	<i>° ' "</i>	<i>"</i>
0	15 8 31.55	24.619	S. 13 33 50.4	79.51	0	17 7 23.99	24.662	S. 17 52 51.6	26.41
1	15 10 59.31	24.633	13 41 44.6	78.56	1	17 9 51.91	24.645	17 55 26.5	25.23
2	15 13 27.15	24.648	13 49 33.1	77.61	2	17 12 19.73	24.628	17 57 54.3	24.03
3	15 15 55.08	24.662	13 57 15.9	76.65	3	17 14 47.45	24.611	18 0 14.9	22.84
4	15 18 23.09	24.675	14 4 52.9	75.67	4	17 17 15.06	24.593	18 2 28.4	21.66
5	15 20 51.18	24.688	14 12 23.9	74.68	5	17 19 42.56	24.573	18 4 34.8	20.48
6	15 23 19.35	24.700	14 19 49.0	73.69	6	17 22 9.94	24.553	18 6 34.1	19.28
7	15 25 47.58	24.712	14 27 8.2	72.69	7	17 24 37.20	24.533	18 8 26.2	18.10
8	15 28 15.89	24.724	14 34 21.3	71.68	8	17 27 4.34	24.513	18 10 11.3	16.93
9	15 30 44.27	24.735	14 41 28.3	70.66	9	17 29 31.35	24.491	18 11 49.3	15.74
10	15 33 12.71	24.745	14 48 29.2	69.63	10	17 31 58.23	24.467	18 13 20.2	14.56
11	15 35 41.21	24.755	14 55 23.9	68.59	11	17 34 24.96	24.443	18 14 44.0	13.38
12	15 38 9.77	24.764	15 2 12.3	67.55	12	17 36 51.55	24.420	18 16 0.7	12.20
13	15 40 38.38	24.773	15 8 54.5	66.50	13	17 39 18.00	24.396	18 17 10.4	11.03
14	15 43 7.04	24.781	15 15 30.3	65.43	14	17 41 44.30	24.370	18 18 13.1	9.87
15	15 45 35.75	24.788	15 21 59.7	64.37	15	17 44 10.44	24.344	18 19 8.8	8.71
16	15 48 4.50	24.795	15 28 22.7	63.29	16	17 46 36.43	24.317	18 19 57.6	7.54
17	15 50 33.29	24.802	15 34 39.2	62.21	17	17 49 2.25	24.289	18 20 39.3	6.38
18	15 53 2.12	24.808	15 40 49.2	61.13	18	17 51 27.90	24.262	18 21 14.1	5.23
19	15 55 30.98	24.813	15 46 52.7	60.03	19	17 53 53.39	24.233	18 21 42.0	4.07
20	15 57 59.87	24.818	15 52 49.6	58.93	20	17 56 18.70	24.203	18 22 2.9	2.92
21	16 0 28.79	24.822	15 58 39.9	57.82	21	17 58 43.83	24.173	18 22 17.0	1.78
22	16 2 57.73	24.824	16 4 23.5	56.71	22	18 1 8.78	24.143	18 22 24.3	0.64
23	16 5 26.68	24.827	16 10 0.4	55.59	23	18 3 33.55	24.113	18 22 24.7	0.50
24	16 7 55.65	24.829	S. 16 15 30.6	54.47	24	18 5 58.13	24.081	S. 18 22 18.3	1.63



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>TUESDAY 21.</b>					<b>THURSDAY 23.</b>				
	h m s	s	S. 18 22 18.3	1.63		h m s	s	S. 16 15 32.2	48.46
0	18 5 58.13	24.081	18 22 18.3	1.63	0	19 57 2.04	22.083	16 15 32.2	48.46
1	18 8 22.52	24.048	18 22 5.1	2.76	1	19 59 14.39	22.036	16 10 39.1	49.24
2	18 10 46.71	24.014	18 21 45.2	3.88	2	20 1 26.47	21.990	16 5 41.3	50.02
3	18 13 10.69	23.981	18 21 18.5	5.00	3	20 3 38.27	21.944	16 0 38.9	50.79
4	18 15 34.48	23.948	18 20 45.2	6.11	4	20 5 49.80	21.898	15 55 31.8	51.57
5	18 17 58.06	23.913	18 20 5.2	7.22	5	20 8 1.04	21.851	15 50 20.1	52.32
6	18 20 21.43	23.878	18 19 18.6	8.32	6	20 10 12.01	21.806	15 45 4.0	53.07
7	18 22 44.59	23.843	18 18 25.4	9.42	7	20 12 22.71	21.760	15 39 43.3	53.81
8	18 25 7.54	23.806	18 17 25.6	10.51	8	20 14 33.13	21.713	15 34 18.3	54.54
9	18 27 30.26	23.769	18 16 19.3	11.59	9	20 16 43.27	21.668	15 28 48.8	55.27
10	18 29 52.77	23.732	18 15 6.5	12.67	10	20 18 53.14	21.623	15 23 15.0	55.98
11	18 32 15.05	23.694	18 13 47.3	13.74	11	20 21 2.74	21.577	15 17 37.0	56.68
12	18 34 37.10	23.656	18 12 21.6	14.82	12	20 23 12.06	21.531	15 11 54.8	57.39
13	18 36 58.92	23.618	18 10 49.5	15.88	13	20 25 21.11	21.486	15 6 8.3	58.09
14	18 39 20.51	23.579	18 9 11.1	16.93	14	20 27 29.89	21.441	15 0 17.7	58.78
15	18 41 41.87	23.540	18 7 26.4	17.98	15	20 29 38.40	21.396	14 54 23.0	59.45
16	18 44 2.99	23.499	18 5 35.4	19.02	16	20 31 46.64	21.351	14 48 24.3	60.11
17	18 46 23.86	23.459	18 3 38.2	20.05	17	20 33 54.61	21.307	14 42 21.7	60.77
18	18 48 44.50	23.419	18 1 34.8	21.08	18	20 36 2.31	21.262	14 36 15.1	61.43
19	18 51 4.89	23.378	17 59 25.3	22.10	19	20 38 9.75	21.218	14 30 4.5	62.08
20	18 53 25.03	23.337	17 57 9.6	23.12	20	20 40 16.92	21.173	14 23 50.1	62.72
21	18 55 44.93	23.295	17 54 47.9	24.13	21	20 42 23.83	21.129	14 17 31.9	63.34
22	18 58 4.57	23.253	17 52 20.1	25.13	22	20 44 30.47	21.086	14 11 10.0	63.96
23	19 0 23.96	23.210	S. 17 49 46.4	26.12	23	20 46 36.86	21.042	S. 14 4 44.4	64.58
<b>WEDNESDAY 22.</b>					<b>FRIDAY 24.</b>				
0	19 2 43.09	23.168	S. 17 47 6.7	27.11	0	20 48 42.98	20.998	S. 13 58 15.1	65.18
1	19 5 1.97	23.124	17 44 21.1	28.08	1	20 50 48.84	20.956	13 51 42.2	65.78
2	19 7 20.58	23.081	17 41 29.7	29.05	2	20 52 54.45	20.913	13 45 5.7	66.38
3	19 9 38.94	23.038	17 38 32.5	30.01	3	20 54 59.80	20.871	13 38 25.7	66.96
4	19 11 57.03	22.993	17 35 29.6	30.97	4	20 57 4.90	20.829	13 31 42.2	67.53
5	19 14 14.85	22.948	17 32 20.9	31.93	5	20 59 9.75	20.788	13 24 55.3	68.10
6	19 16 32.41	22.905	17 29 6.5	32.87	6	21 1 14.35	20.746	13 18 5.0	68.66
7	19 18 49.71	22.861	17 25 46.5	33.79	7	21 3 18.70	20.704	13 11.11.4	69.22
8	19 21 6.74	22.816	17 22 21.0	34.72	8	21 5 22.80	20.663	13 4 14.4	69.77
9	19 23 23.50	22.771	17 18 49.9	35.64	9	21 7 26.65	20.623	12 57 14.2	70.30
10	19 25 39.99	22.726	17 15 13.3	36.55	10	21 9 30.27	20.583	12 50 10.8	70.83
11	19 27 56.21	22.680	17 11 31.3	37.45	11	21 11 33.64	20.542	12 43 4.3	71.35
12	19 30 12.15	22.634	17 7 43.9	38.34	12	21 13 36.77	20.502	12 35 54.6	71.87
13	19 32 27.82	22.589	17 3 51.2	39.23	13	21 15 39.66	20.463	12 28 41.8	72.38
14	19 34 43.22	22.544	16 59 53.2	40.11	14	21 17 42.32	20.424	12 21 26.0	72.88
15	19 36 58.35	22.498	16 55 49.9	40.98	15	21 19 44.75	20.385	12 14 7.3	73.38
16	19 39 13.20	22.452	16 51 41.4	41.84	16	21 21 46.94	20.347	12 6 45.5	73.87
17	19 41 27.77	22.406	16 47 27.8	42.69	17	21 23 48.91	20.309	11 59 20.9	74.34
18	19 43 42.07	22.360	16 43 9.1	43.54	18	21 25 50.65	20.271	11 51 53.4	74.82
19	19 45 56.09	22.313	16 38 45.3	44.38	19	21 27 52.16	20.233	11 44 23.1	75.28
20	19 48 9.83	22.268	16 34 16.5	45.22	20	21 29 53.45	20.197	11 36 50.0	75.75
21	19 50 23.30	22.222	16 29 42.7	46.03	21	21 31 54.52	20.160	11 29 14.1	76.20
22	19 52 36.49	22.175	16 25 4.1	46.84	22	21 33 55.37	20.124	11 21 35.6	76.64
23	19 54 49.40	22.129	16 20 20.6	47.66	23	21 35 56.01	20.089	11 13 54.4	77.08
24	19 57 2.04	22.083	S. 16 15 32.2	48.46	24	21 37 56.44	20.053	S. 11 6 10.6	77.52

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SATURDAY 25.</b>					<b>MONDAY 27.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	21 37 56.44	20.053	S. 11 6 10.6	77.52	0	23 10 56.59	18.877	S. 4 16 11.9	91.06
1	21 39 56.65	20.018	10 58 24.2	77.94	1	23 12 49.81	18.863	4 7 5.1	91.21
2	21 41 56.65	19.983	10 50 35.3	78.36	2	23 14 42.95	18.851	3 57 57.4	91.34
3	21 43 56.45	19.950	10 42 43.9	78.78	3	23 16 36.02	18.840	3 48 49.0	91.48
4	21 45 56.05	19.916	10 34 50.0	79.18	4	23 18 29.03	18.829	3 39 39.7	91.61
5	21 47 55.44	19.882	10 26 53.7	79.58	5	23 20 21.97	18.818	3 30 29.7	91.73
6	21 49 54.63	19.849	10 18 55.0	79.98	6	23 22 14.84	18.807	3 21 19.0	91.84
7	21 51 53.63	19.817	10 10 54.0	80.36	7	23 24 7.65	18.798	3 12 7.6	91.96
8	21 53 52.43	19.784	10 2 50.7	80.73	8	23 26 0.41	18.788	3 2 55.5	92.08
9	21 55 51.04	19.753	9 54 45.2	81.11	9	23 27 53.11	18.779	2 53 42.7	92.18
10	21 57 49.46	19.722	9 46 37.4	81.48	10	23 29 45.76	18.771	2 44 29.4	92.27
11	21 59 47.70	19.691	9 38 27.4	81.84	11	23 31 38.36	18.763	2 35 15.5	92.37
12	22 1 45.75	19.660	9 30 15.3	82.19	12	23 33 30.91	18.755	2 26 1.0	92.45
13	22 3 43.62	19.630	9 22 1.1	82.54	13	23 35 23.42	18.748	2 16 46.1	92.53
14	22 5 41.31	19.601	9 13 44.8	82.88	14	23 37 15.89	18.743	2 7 30.6	92.62
15	22 7 38.83	19.572	9 5 26.5	83.22	15	23 39 8.33	18.737	1 58 14.7	92.68
16	22 9 36.18	19.543	8 57 6.2	83.55	16	23 41 0.73	18.731	1 48 58.4	92.75
17	22 11 33.35	19.515	8 48 43.9	83.88	17	23 42 53.10	18.726	1 39 41.7	92.82
18	22 13 30.36	19.488	8 40 19.7	84.19	18	23 44 45.44	18.722	1 30 24.6	92.88
19	22 15 27.20	19.460	8 31 53.6	84.50	19	23 46 37.76	18.718	1 21 7.2	92.92
20	22 17 23.88	19.433	8 23 25.7	84.81	20	23 48 30.06	18.715	1 11 49.6	92.97
21	22 19 20.40	19.407	8 14 55.9	85.11	21	23 50 22.34	18.712	1 2 31.6	93.02
22	22 21 16.76	19.381	8 6 24.4	85.40	22	23 52 14.60	18.708	0 53 13.4	93.05
23	22 23 12.97	19.356	S. 7 57 51.1	85.69	23	23 54 6.84	18.707	S. 0 43 55.0	93.08
<b>SUNDAY 26.</b>					<b>TUESDAY 28.</b>				
	h m s	s	S. ° ' "	"		h m s	s	S. ° ' "	"
0	22 25 9.03	19.331	S. 7 49 16.1	85.97	0	23 55 59.08	18.706	S. 0 34 36.4	93.11
1	22 27 4.94	19.306	7 40 39.5	86.24	1	23 57 51.31	18.705	0 25 17.7	93.13
2	22 29 0.70	19.282	7 32 1.2	86.52	2	23 59 43.54	18.704	0 15 58.9	93.14
3	22 30 56.32	19.259	7 23 21.3	86.78	3	0 1 35.76	18.704	S. 0 6 40.0	93.16
4	22 32 51.81	19.236	7 14 39.8	87.04	4	0 3 27.99	18.705	N. 0 2 39.0	93.17
5	22 34 47.15	19.213	7 5 56.8	87.29	5	0 5 20.22	18.706	0 11 58.0	93.16
6	22 36 42.36	19.191	6 57 12.3	87.54	6	0 7 12.46	18.708	0 21 16.9	93.16
7	22 38 37.44	19.170	6 48 26.3	87.78	7	0 9 4.71	18.709	0 30 35.9	93.15
8	22 40 32.40	19.149	6 39 38.9	88.02	8	0 10 56.97	18.711	0 39 54.7	93.13
9	22 42 27.23	19.128	6 30 50.1	88.25	9	0 12 49.24	18.714	0 49 13.5	93.12
10	22 44 21.93	19.107	6 21 59.9	88.48	10	0 14 41.54	18.718	0 58 32.1	93.09
11	22 46 16.51	19.088	6 13 8.3	88.70	11	0 16 33.86	18.722	1 7 50.6	93.06
12	22 48 10.98	19.069	6 4 15.5	88.91	12	0 18 26.20	18.726	1 17 8.8	93.03
13	22 50 5.34	19.050	5 55 21.4	89.12	13	0 20 18.57	18.731	1 26 26.9	92.98
14	22 51 59.58	19.032	5 46 26.1	89.33	14	0 22 10.97	18.736	1 35 44.6	92.93
15	22 53 53.72	19.014	5 37 29.5	89.53	15	0 24 3.40	18.742	1 45 2.1	92.89
16	22 55 47.75	18.997	5 28 31.8	89.71	16	0 25 55.87	18.748	1 54 19.3	92.83
17	22 57 41.68	18.980	5 19 33.0	89.90	17	0 27 48.38	18.755	2 3 36.1	92.77
18	22 59 35.51	18.964	5 10 33.0	90.08	18	0 29 40.93	18.762	2 12 52.5	92.70
19	23 1 29.25	18.948	5 1 32.0	90.26	19	0 31 33.52	18.769	2 22 8.5	92.63
20	23 3 22.89	18.933	4 52 29.9	90.43	20	0 33 26.16	18.778	2 31 24.1	92.56
21	23 5 16.44	18.918	4 43 26.8	90.59	21	0 35 18.85	18.786	2 40 39.2	92.48
22	23 7 9.91	18.904	4 34 22.8	90.75	22	0 37 11.59	18.795	2 49 53.8	92.38
23	23 9 3.29	18.890	4 25 17.8	90.91	23	0 39 4.39	18.804	2 59 7.8	92.28
24	23 10 56.59	18.877	S. 4 16 11.9	91.06	24	0 40 57.24	18.814	N. 3 8 21.2	92.19

MEAN TIME.

THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
WEDNESDAY 29.					THURSDAY 30.				
	h m s	s	° ' " N.	"		h m s	s	° ' " N.	"
0	0 40 57.24	18.814	3 8 21.2	92.19	0	1 26 30.21	19.184	6 45 25.5	88.16
1	0 42 50.16	18.825	3 17 34.1	92.09	1	1 28 25.38	19.206	6 54 13.7	87.91
2	0 44 43.14	18.836	3 26 46.3	91.98	2	1 30 20.68	19.227	7 3 0.4	87.67
3	0 46 36.19	18.848	3 35 57.8	91.86	3	1 32 16.10	19.248	7 11 45.7	87.42
4	0 48 29.31	18.859	3 45 8.6	91.74	4	1 34 11.65	19.269	7 20 29.4	87.15
5	0 50 22.50	18.871	3 54 18.7	91.62	5	1 36 7.33	19.291	7 29 11.5	86.88
6	0 52 15.76	18.883	4 3 28.1	91.49	6	1 38 3.14	19.313	7 37 52.0	86.62
7	0 54 9.10	18.897	4 12 36.6	91.35	7	1 39 59.09	19.337	7 46 30.9	86.34
8	0 56 2.52	18.910	4 21 44.3	91.21	8	1 41 55.18	19.360	7 55 8.1	86.06
9	0 57 56.02	18.924	4 30 51.1	91.06	9	1 43 51.41	19.384	8 3 43.6	85.77
10	0 59 49.61	18.938	4 39 57.0	90.90	10	1 45 47.79	19.408	8 12 17.3	85.47
11	1 1 43.28	18.953	4 49 1.9	90.74	11	1 47 44.31	19.433	8 20 49.2	85.17
12	1 3 37.05	18.969	4 58 5.9	90.58	12	1 49 40.98	19.457	8 29 19.3	84.86
13	1 5 30.91	18.985	5 7 8.9	90.42	13	1 51 37.79	19.482	8 37 47.5	84.54
14	1 7 24.87	19.001	5 16 10.9	90.23	14	1 53 34.76	19.508	8 46 13.8	84.22
15	1 9 18.92	19.017	5 25 11.7	90.05	15	1 55 31.88	19.533	8 54 38.1	83.89
16	1 11 13.07	19.034	5 34 11.5	89.87	16	1 57 29.16	19.559	9 3 0.5	83.56
17	1 13 7.33	19.052	5 43 10.1	89.68	17	1 59 26.59	19.585	9 11 20.8	83.22
18	1 15 1.69	19.069	5 52 7.6	89.48	18	2 1 24.18	19.613	9 19 39.1	82.87
19	1 16 56.16	19.088	6 1 3.8	89.27	19	2 3 21.94	19.640	9 27 55.2	82.51
20	1 18 50.74	19.106	6 9 58.8	89.06	20	2 5 19.86	19.667	9 36 9.2	82.16
21	1 20 45.43	19.125	6 18 52.5	88.83	21	2 7 17.94	19.694	9 44 21.1	81.79
22	1 22 40.24	19.145	6 27 44.8	88.61	22	2 9 16.19	19.722	9 52 30.7	81.41
23	1 24 35.17	19.164	6 36 35.8	88.39	23	2 11 14.61	19.750	10 0 38.0	81.03
24	1 26 30.21	19.184	N. 6 45 25.5	88.16	24	2 13 13.19	19.778	N. 10 8 43.1	80.65

PHASES OF THE MOON.

Nov. 4	○ Full Moon	- - - - -	h m	6 36.5
11	☾ Last Quarter	- - - - -	19 52.5	
18	● New Moon	- - - - -	12 6.4	
25	☽ First Quarter	- - - - -	20 15.0	

Nov. 16	☾ Perigee	- - - - -	h	12.1
28	☾ Apogee	- - - - -	7.4	

## AT APPARENT NOON.

		THE SUN'S				Sidereal Time of the Semi- diameter passing the Meridian.*	Equation of Time, to be subtracted from	
Date.		Apparent Right Ascension.	Var. in 1 hour.	Apparent Declination.	Var. in 1 hour.		added to Apparent Time.	Var. in 1 hour.
		h m s	s	° ' "		m s	m s	s
Frid.	1	16 27 7.36	10.779	S. 21 43 51.9	23.86	1 10.18	11 4.89	0.920
Sat.	2	16 31 26.39	10.806	21 53 12.0	22.81	1 10.27	10 42.49	0.947
Sun.	3	16 35 46.04	10.831	22 2 6.9	21.76	1 10.35	10 19.45	0.972
Mon.	4	16 40 6.30	10.856	22 10 36.3	20.69	1 10.44	9 55.81	0.997
Tues.	5	16 44 27.15	10.881	22 18 39.9	19.61	1 10.51	9 31.58	1.021
Wed.	6	16 48 48.57	10.904	22 26 17.5	18.52	1 10.59	9 6.79	1.044
Thur.	7	16 53 10.54	10.926	22 33 28.9	17.42	1 10.66	8 41.45	1.067
Frid.	8	16 57 33.03	10.948	22 40 13.8	16.31	1 10.73	8 15.58	1.088
Sat.	9	17 1 56.03	10.968	22 46 32.0	15.20	1 10.79	7 49.21	1.108
Sun.	10	17 6 19.51	10.987	22 52 23.3	14.08	1 10.85	7 22.37	1.127
Mon.	11	17 10 43.43	11.005	22 57 47.6	12.94	1 10.90	6 55.08	1.146
Tues.	12	17 15 7.77	11.022	23 2 44.6	11.80	1 10.95	6 27.37	1.163
Wed.	13	17 19 32.51	11.038	23 7 14.2	10.66	1 11.00	5 59.26	1.178
Thur.	14	17 23 57.60	11.052	23 11 16.3	9.51	1 11.04	5 30.81	1.192
Frid.	15	17 28 23.02	11.065	23 14 50.6	8.35	1 11.08	5 2.03	1.205
Sat.	16	17 32 48.72	11.076	23 17 57.2	7.19	1 11.12	4 32.96	1.216
Sun.	17	17 37 14.68	11.086	23 20 35.8	6.02	1 11.15	4 3.64	1.226
Mon.	18	17 41 40.85	11.094	23 22 46.3	4.85	1 11.17	3 34.11	1.234
Tues.	19	17 46 7.19	11.100	23 24 28.8	3.68	1 11.19	3 4.41	1.240
Wed.	20	17 50 33.66	11.105	23 25 43.1	2.51	1 11.21	2 34.57	1.245
Thur.	21	17 55 0.23	11.108	23 26 29.1	1.33	1 11.22	2 4.64	1.248
Frid.	22	17 59 26.86	11.110	23 26 46.9	0.15	1 11.23	1 34.66	1.249
Sat.	23	18 3 53.50	11.110	23 26 36.3	1.03	1 11.23	1 4.65	1.250
Sun.	24	18 8 20.13	11.109	23 25 57.5	2.21	1 11.23	0 34.66	1.249
Mon.	25	18 12 46.71	11.106	23 24 50.4	3.39	1 11.22	0 4.72	1.246
Tues.	26	18 17 13.21	11.101	23 23 15.0	4.56	1 11.21	0 25.14	1.241
Wed.	27	18 21 39.58	11.096	23 21 11.4	5.74	1 11.20	0 54.87	1.236
Thur.	28	18 26 5.80	11.089	23 18 39.6	6.91	1 11.18	1 24.45	1.229
Frid.	29	18 30 31.83	11.080	23 15 39.8	8.07	1 11.15	1 53.84	1.220
Sat.	30	18 34 57.64	11.070	23 12 12.0	9.24	1 11.12	2 23.02	1.210
Sun.	31	18 39 23.20	11.059	23 8 16.2	10.40	1 11.09	2 51.94	1.199
Mon.	32	18 43 48.48	11.047	S. 23 3 52.7	11.56	1 11.05	3 20.58	1.187

\* Mean Time of the Semidiameter passing may be found by subtracting 0.19 from the Sidereal Time.

## AT MEAN NOON.

Date.		THE SUN'S			Equation of Time, to be subtracted from	Sidereal Time.
		Apparent Right Ascension.	Apparent Declination.	Semi-diameter.*	added to Apparent Time.	
		h m s	S. ° ' "	' "	m s	h m s
Frid.	1	16 27 9.35	S. 21 43 56.3	16 14.97	11 4.72	16 38 14.07
Sat.	2	16 31 28.31	21 53 16.1	16 15.13	10 42.32	16 42 10.63
Sun.	3	16 35 47.90	22 2 10.6	16 15.28	10 19.29	16 46 7.19
Mon.	4	16 40 8.10	22 10 39.7	16 15.42	9 55.65	16 50 3.74
Tues.	5	16 44 28.88	22 18 43.0	16 15.56	9 31.42	16 54 0.30
Wed.	6	16 48 50.23	22 26 20.3	16 15.70	9 6.63	16 57 56.86
Thur.	7	16 53 12.12	22 33 31.4	16 15.83	8 41.29	17 1 53.41
Frid.	8	16 57 34.54	22 40 16.0	16 15.95	8 15.43	17 5 49.97
Sat.	9	17 1 57.46	22 46 33.9	16 16.07	7 49.07	17 9 46.53
Sun.	10	17 6 20.85	22 52 25.0	16 16.17	7 22.23	17 13 43.08
Mon.	11	17 10 44.70	22 57 49.1	16 16.28	6 54.95	17 17 39.64
Tues.	12	17 15 8.96	23 2 45.9	16 16.38	6 27.24	17 21 36.20
Wed.	13	17 19 33.61	23 7 15.3	16 16.48	5 59.15	17 25 32.76
Thur.	14	17 23 58.62	23 11 17.2	16 16.57	5 30.70	17 29 29.31
Frid.	15	17 28 23.95	23 14 51.3	16 16.66	5 1.93	17 33 25.87
Sat.	16	17 32 49.56	23 17 57.7	16 16.75	4 32.87	17 37 22.43
Sun.	17	17 37 15.43	23 20 36.2	16 16.83	4 3.56	17 41 18.98
Mon.	18	17 41 41.51	23 22 46.6	16 16.91	3 34.04	17 45 15.54
Tues.	19	17 46 7.75	23 24 29.0	16 16.99	3 4.35	17 49 12.10
Wed.	20	17 50 34.14	23 25 43.2	16 17.06	2 34.52	17 53 8.66
Thur.	21	17 55 0.62	23 26 29.2	16 17.13	2 4.60	17 57 5.21
Frid.	22	17 59 27.15	23 26 46.9	16 17.19	1 34.62	18 1 1.77
Sat.	23	18 3 53.70	23 26 36.3	16 17.25	1 4.63	18 4 58.33
Sun.	24	18 8 20.24	23 25 57.5	16 17.31	0 34.65	18 8 54.89
Mon.	25	18 12 46.73	23 24 50.4	16 17.36	0 4.72	18 12 51.44
Tues.	26	18 17 13.13	23 23 15.0	16 17.41	0 25.13	18 16 48.00
Wed.	27	18 21 39.41	23 21 11.5	16 17.45	0 54.85	18 20 44.56
Thur.	28	18 26 5.54	23 18 39.8	16 17.48	1 24.42	18 24 41.12
Frid.	29	18 30 31.48	23 15 40.0	16 17.51	1 53.80	18 28 37.67
Sat.	30	18 34 57.20	23 12 12.3	16 17.54	2 22.97	18 32 34.23
Sun.	31	18 39 22.67	23 8 16.7	16 17.56	2 51.88	18 36 30.79
Mon.	32	18 43 47.86	S. 23 3 53.3	16 17.57	3 20.52	18 40 27.34

\* The Semidiameter for *Apparent* Noon may be assumed the same as that for *Mean* Noon.

## MEAN TIME.

Day.	THE SUN'S <i>Apparent</i>		Logarithm of the Radius Vector of the Earth.	Transit of the First Point of Aries.	THE MOON'S			
	Longitude.	Latitude.			Semidiameter.		Horizontal Parallax.	
	Noon.	Noon.			Noon.	Midnight.	Noon.	Midnight.
				h m s				
1	248° 31' 27.5	S. 0° 16	9.9938131	7 20 33.55	14 55.42	14 58.47	54 40.60	54 51.75
2	249 32 17.1	0.24	.9937437	7 16 37.64	15 1.84	15 5.48	55 4.09	55 17.43
3	250 33 7.7	0.31	.9936767	7 12 41.73	15 9.32	15 13.30	55 31.49	55 46.09
4	251 33 59.3	0.34	9.9936122	7 8 45.82	15 17.37	15 21.48	56 1.02	56 16.09
5	252 34 52.0	0.35	.9935501	7 4 49.91	15 25.59	15 29.65	56 31.13	56 46.01
6	253 35 45.8	0.34	.9934907	7 0 54.00	15 33.64	15 37.53	57 0.63	57 14.88
7	254 36 4.7	0.29	9.9934337	6 56 58.09	15 41.31	15 44.96	57 28.72	57 42.09
8	255 37 36.8	0.22	.9933792	6 53 2.18	15 48.49	15 51.87	57 55.01	58 7.42
9	256 38 34.0	S. 0.11	.9933272	6 49 6.27	15 55.12	15 58.23	58 19.34	58 30.72
10	257 39 32.4	N. 0.01	9.9932776	6 45 10.36	16 1.18	16 3.96	58 41.54	58 51.73
11	258 40 32.0	0.14	.9932301	6 41 14.44	16 6.55	16 8.91	59 1.20	59 9.85
12	259 41 32.7	0.28	.9931847	6 37 18.53	16 11.00	16 12.76	59 17.50	59 23.96
13	260 42 34.6	0.42	9.9931413	6 33 22.62	16 14.15	16 15.10	59 29.04	59 32.51
14	261 43 37.5	0.54	.9930997	6 29 26.71	16 15.54	16 15.43	59 34.15	59 33.72
15	262 44 41.3	0.65	.9930598	6 25 30.80	16 14.70	16 13.32	59 31.06	59 26.01
16	263 45 46.1	0.74	9.9930216	6 21 34.89	16 11.27	16 8.54	59 18.50	59 8.49
17	264 46 51.7	0.78	.9929849	6 17 38.98	16 5.15	16 1.14	58 56.08	58 41.40
18	265 47 58.0	0.80	.9929498	6 13 43.07	15 56.57	15 51.53	58 24.66	58 6.18
19	266 49 4.8	0.80	9.9929161	6 9 47.15	15 46.11	15 40.40	57 46.30	57 25.39
20	267 50 12.2	0.75	.9928840	6 5 51.24	15 34.53	15 28.62	57 3.90	56 42.24
21	268 51 19.9	0.68	.9928536	6 1 55.33	15 22.78	15 17.13	56 20.84	56 0.13
22	269 52 27.9	0.59	9.9928249	5 57 59.42	15 11.77	15 6.79	55 40.47	55 22.22
23	270 53 36.2	0.50	.9927980	5 54 3.51	15 2.27	14 58.29	55 5.67	54 51.10
24	271 54 44.6	0.38	.9927730	5 50 7.60	14 54.92	14 52.18	54 38.74	54 28.73
25	272 55 53.1	0.26	9.9927501	5 46 11.69	14 50.15	14 48.81	54 21.27	54 16.39
26	273 57 1.6	0.15	.9927294	5 42 15.77	14 48.21	14 48.32	54 14.17	54 14.59
27	274 58 10.2	N. 0.04	.9927110	5 38 19.86	14 49.16	14 50.70	54 17.67	54 23.29
28	275 59 18.8	S. 0.06	9.9926949	5 34 23.95	14 52.90	14 55.74	54 31.36	54 41.76
29	277 0 27.4	0.15	.9926813	5 30 28.04	14 59.15	15 3.09	54 54.25	55 8.67
30	278 1 35.9	0.22	.9926702	5 26 32.13	15 7.47	15 12.22	55 24.73	55 42.13
31	279 2 44.3	0.27	.9926618	5 22 36.22	15 17.25	15 22.48	56 0.59	56 19.75
32	280 3 52.7	S. 0.29	9.9926562	5 18 40.31	15 27.81	15 33.13	56 39.26	56 58.75

## MEAN TIME.

THE MOON'S								
Day.	Longitude.		Latitude.		Age.	Meridian Passage.		
	Noon.	Midnight.	Noon.	Midnight.	Noon.	Upper.	Lower.	
	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	S. <sup>°</sup> <sup>'</sup> <sup>"</sup>	S. <sup>°</sup> <sup>'</sup> <sup>"</sup>	d	h m	h m	
1	34 31 33.1	40 36 17.5	S. 3 3 53.2	S. 3 28 20.1	12.50	9 53.1	22 16.1	
2	46 44 17.0	52 55 44.2	3 50 33.2	4 10 14.0	13.50	10 39.7	23 3.9	
3	59 10 47.1	65 29 29.8	4 27 4.5	4 40 47.7	14.50	11 28.6	23 53.9	
4	71 51 51.7	78 17 48.9	4 51 8.1	4 57 52.3	15.50	12 19.6	* *	
5	84 47 14.4	91 19 58.5	5 0 49.0	4 59 50.2	16.50	13 12.2	0 45.7	
6	97 55 49.8	104 34 36.2	4 54 50.9	4 45 49.8	17.50	14 5.7	1 38.9	
7	111 16 5.4	118 0 6.0	4 32 49.5	4 15 56.2	18.50	14 59.4	2 32.6	
8	124 46 27.8	131 35 2.4	3 55 20.2	3 31 15.6	19.50	15 52.6	3 26.1	
9	138 25 43.8	145 18 27.8	3 4 0.1	2 33 54.7	20.50	16 45.0	4 18.9	
10	152 13 12.1	159 9 55.9	2 1 23.8	1 26 54.6	21.50	17 36.8	5 11.0	
11	166 8 39.0	173 9 21.1	S. 0 50 56.7	S. 0 14 2.2	22.50	18 28.3	6 2.5	
12	180 12 0.3	187 16 32.8	N. 0 23 15.2	N. 1 0 20.1	23.50	19 20.1	6 54.1	
13	194 22 51.1	201 30 43.4	1 36 36.8	2 11 29.0	24.50	20 12.9	7 46.3	
14	208 39 52.8	215 49 56.6	2 44 21.2	3 14 39.8	25.50	21 7.0	8 39.7	
15	223 0 26.8	230 10 49.5	3 41 53.1	4 5 33.5	26.50	22 2.6	9 34.6	
16	237 20 26.5	244 28 36.3	4 25 17.5	4 40 46.8	27.50	22 59.3	10 30.9	
17	251 34 35.7	258 37 41.3	4 51 49.2	4 58 18.2	28.50	23 56.2	11 27.8	
18	265 37 12.1	272 32 30.7	5 0 13.8	4 57 41.3	29.50	* *	12 24.4	
19	279 23 5.2	286 8 30.2	4 50 51.8	4 40 0.2	0.99	0 52.1	13 19.4	
20	292 48 28.2	299 22 49.7	4 25 25.3	4 7 28.0	1.99	1 46.0	14 12.0	
21	305 51 33.0	312 14 44.7	3 46 31.2	3 22 58.4	2.99	2 37.3	15 1.8	
22	318 32 38.2	324 45 33.8	2 57 12.9	2 29 37.9	3.99	3 25.7	15 48.9	
23	330 53 57.6	336 58 20.2	2 0 35.9	1 30 28.0	4.99	4 11.6	16 33.7	
24	342 59 16.3	348 57 23.8	N. 0 59 34.6	N. 0 28 14.6	5.99	4 55.5	17 16.9	
25	354 53 22.6	0 47 54.5	S. 0 3 13.7	S. 0 34 32.8	6.99	5 38.1	17 59.3	
26	6 41 41.8	12 35 26.8	1 5 25.8	1 35 36.3	7.99	6 20.3	18 41.5	
27	18 29 51.7	24 25 37.4	2 4 48.0	2 32 44.3	8.99	7 2.9	19 24.6	
28	30 23 23.0	36 23 44.8	2 59 8.8	3 23 44.5	9.99	7 46.6	20 9.0	
29	42 27 16.8	48 34 28.7	3 46 14.3	4 6 20.7	10.99	8 32.0	20 55.5	
30	54 45 45.9	61 1 28.8	4 23 46.2	4 38 13.4	11.99	9 19.7	21 44.5	
31	67 21 52.2	73 47 5.2	4 49 25.7	4 57 7.2	12.99	10 9.9	22 35.8	
32	80 17 10.0	86 52 3.0	S. 5 1 4.2	S. 5 1 4.7	13.99	11 2.4	23 29.3	

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
FRIDAY 1.					SUNDAY 3.				
	h m s	s	N. 10° 8' 43" 1	80.65		h m s	s	N. 15° 37' 57" 9	53.80
0	2 13 13.19	19.778	10 16 45.8	80.25	0	3 51 51.85	21.373	15 43 18.5	53.07
1	2 15 11.95	19.808	10 24 46.1	79.85	1	3 54 0.19	21.407	15 48 34.7	52.33
2	2 17 10.89	19.838	10 32 44.0	79.44	2	3 56 8.73	21.441	15 53 46.4	51.58
3	2 19 10.00	19.867	10 40 39.4	79.03	3	3 58 17.48	21.476	15 58 53.6	50.82
4	2 21 9.29	19.897	10 48 32.3	78.61	4	4 0 26.44	21.511	16 3 56.2	50.06
5	2 23 8.76	19.926	10 56 22.7	78.18	5	4 2 35.61	21.545	16 8 54.3	49.29
6	2 25 8.40	19.956	11 4 10.5	77.74	6	4 4 44.98	21.579	16 13 47.7	48.51
7	2 27 8.23	19.987	11 11 55.6	77.30	7	4 6 54.56	21.613	16 18 36.4	47.72
8	2 29 8.25	20.018	11 19 38.1	76.86	8	4 9 4.34	21.647	16 23 20.4	46.93
9	2 31 8.45	20.048	11 27 17.9	76.40	9	4 11 14.32	21.680	16 27 59.7	46.15
10	2 33 8.83	20.080	11 34 54.9	75.93	10	4 13 24.50	21.714	16 32 34.2	45.34
11	2 35 9.41	20.112	11 42 29.1	75.47	11	4 15 34.89	21.748	16 37 3.8	44.53
12	2 37 10.17	20.143	11 50 0.5	74.99	12	4 17 45.48	21.781	16 41 28.6	43.72
13	2 39 11.12	20.175	11 57 29.0	74.51	13	4 19 56.26	21.814	16 45 48.4	42.89
14	2 41 12.27	20.207	12 4 54.6	74.02	14	4 22 7.25	21.847	16 50 3.3	42.07
15	2 43 13.61	20.239	12 12 17.2	73.52	15	4 24 18.43	21.880	16 54 13.2	41.23
16	2 45 15.14	20.272	12 19 36.8	73.01	16	4 26 29.81	21.912	16 58 18.0	40.38
17	2 47 16.87	20.305	12 26 53.3	72.50	17	4 28 41.38	21.944	17 2 17.8	39.54
18	2 49 18.80	20.338	12 34 6.8	71.98	18	4 30 53.14	21.977	17 6 12.5	38.68
19	2 51 20.92	20.371	12 41 17.1	71.46	19	4 33 5.10	22.008	17 10 2.0	37.83
20	2 53 23.25	20.404	12 48 24.3	70.93	20	4 35 17.24	22.040	17 13 46.4	36.96
21	2 55 25.77	20.437	12 55 28.2	70.38	21	4 37 29.58	22.072	17 17 25.5	36.08
22	2 57 28.49	20.471	69.83		22	4 39 42.10	22.103	17 20 59.4	35.21
23	2 59 31.42	20.504			23	4 41 54.81	22.133		
SATURDAY 2.					MONDAY 4.				
	h m s	s	N. 13° 9' 26" 2	69.28		h m s	s	N. 17° 24' 28" 0	34.33
0	3 1 34.54	20.538	13 16 20.2	68.72	0	4 44 7.70	22.163	17 27 51.3	33.43
1	3 3 37.87	20.573	13 23 10.8	68.15	1	4 46 20.77	22.193	17 31 9.2	32.53
2	3 5 41.41	20.607	13 29 58.0	67.57	2	4 48 34.02	22.223	17 34 21.7	31.63
3	3 7 45.15	20.641	13 36 41.7	66.98	3	4 50 47.45	22.253	17 37 28.7	30.72
4	3 9 49.10	20.675	13 43 21.8	66.39	4	4 53 1.06	22.283	17 40 30.3	29.81
5	3 11 53.25	20.709	13 49 58.4	65.80	5	4 55 14.84	22.312	17 43 26.4	28.89
6	3 13 57.61	20.744	13 56 31.4	65.20	6	4 57 28.80	22.340	17 46 17.0	27.97
7	3 16 2.18	20.779	14 3 0.8	64.58	7	4 59 42.92	22.368	17 49 2.1	27.04
8	3 18 6.96	20.813	14 9 26.4	63.96	8	5 1 57.21	22.396	17 51 41.5	26.10
9	3 20 11.94	20.848	14 15 48.3	63.33	9	5 4 11.67	22.424	17 54 15.3	25.17
10	3 22 17.13	20.883	14 22 6.4	62.70	10	5 6 26.30	22.451	17 56 43.5	24.23
11	3 24 22.53	20.918	14 28 20.7	62.06	11	5 8 41.08	22.477	17 59 6.0	23.27
12	3 26 28.15	20.953	14 34 31.1	61.41	12	5 10 56.02	22.503	18 1 22.7	22.32
13	3 28 33.97	20.988	14 40 37.6	60.76	13	5 13 11.12	22.530	18 3 33.7	21.37
14	3 30 40.00	21.023	14 46 40.2	60.09	14	5 15 26.38	22.556	18 5 39.0	20.40
15	3 32 46.24	21.058	14 52 38.7	59.42	15	5 17 41.79	22.581	18 7 38.5	19.43
16	3 34 52.69	21.093	14 58 33.2	58.74	16	5 19 57.35	22.605	18 9 32.1	18.45
17	3 36 59.35	21.128	15 4 23.6	58.06	17	5 22 13.05	22.629	18 11 19.9	17.47
18	3 39 6.22	21.163	15 10 9.9	57.37	18	5 24 28.90	22.654	18 13 1.8	16.49
19	3 41 13.30	21.198	15 15 52.0	56.67	19	5 26 44.90	22.678	18 14 37.8	15.51
20	3 43 20.59	21.233	15 21 29.9	55.97	20	5 29 1.03	22.700	18 16 7.9	14.53
21	3 45 28.09	21.268	15 27 3.6	55.25	21	5 31 17.30	22.723	18 17 32.1	13.53
22	3 47 35.80	21.303	15 32 32.9	54.53	22	5 33 33.71	22.746	18 18 50.2	12.53
23	3 49 43.72	21.338			23	5 35 50.25	22.768		
24	3 51 51.85	21.373	N. 15° 37' 57" 9	53.80	24	5 38 6.92	22.788	N. 18° 20' 2.4	11.53



## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>TUESDAY 5.</b>					<b>THURSDAY 7.</b>				
	h m s	s	N. 18 20 2.4	11.53		h m s	s	N. 17 16 16.4	38.24
0	5 38 6.92	22.788	18 20 2.4	11.53	0	7 29 0.26	23.223	17 16 16.4	38.24
1	5 40 23.71	22.808	18 21 8.6	10.53	1	7 31 19.59	23.220	17 12 23.9	39.26
2	5 42 40.62	22.829	18 22 8.7	9.52	2	7 33 38.90	23.217	17 8 25.3	40.28
3	5 44 57.66	22.850	18 23 2.8	8.51	3	7 35 58.19	23.213	17 4 20.6	41.28
4	5 47 14.82	22.869	18 23 50.8	7.50	4	7 38 17.46	23.209	17 0 9.9	42.29
5	5 49 32.09	22.888	18 24 32.8	6.48	5	7 40 36.70	23.204	16 55 53.1	43.29
6	5 51 49.47	22.906	18 25 8.6	5.46	6	7 42 55.91	23.200	16 51 30.4	44.29
7	5 54 6.96	22.923	18 25 38.3	4.43	7	7 45 15.10	23.195	16 47 1.6	45.30
8	5 56 24.55	22.941	18 26 1.8	3.41	8	7 47 34.25	23.189	16 42 26.8	46.29
9	5 58 42.25	22.958	18 26 19.2	2.38	9	7 49 53.37	23.183	16 37 46.1	47.28
10	6 1 0.05	22.975	18 26 30.4	1.35	10	7 52 12.45	23.177	16 32 59.5	48.26
11	6 3 17.95	22.991	18 26 35.4	0.32	11	7 54 31.49	23.171	16 28 7.0	49.24
12	6 5 35.94	23.006	18 26 34.2	0.72	12	7 56 50.50	23.164	16 23 8.6	50.22
13	6 7 54.02	23.021	18 26 26.8	1.75	13	7 59 9.46	23.156	16 18 4.3	51.19
14	6 10 12.19	23.035	18 26 13.2	2.78	14	8 1 28.37	23.148	16 12 54.3	52.16
15	6 12 30.44	23.049	18 25 53.4	3.83	15	8 3 47.24	23.141	16 7 38.4	53.13
16	6 14 48.78	23.063	18 25 27.3	4.88	16	8 6 6.06	23.133	16 2 16.8	54.08
17	6 17 7.20	23.076	18 24 54.9	5.92	17	8 8 24.83	23.124	15 56 49.4	55.04
18	6 19 25.69	23.088	18 24 16.3	6.96	18	8 10 43.55	23.116	15 51 16.3	55.98
19	6 21 44.25	23.099	18 23 31.4	8.01	19	8 13 2.22	23.107	15 45 37.6	56.93
20	6 24 2.88	23.111	18 22 40.2	9.05	20	8 15 20.83	23.098	15 39 53.2	57.87
21	6 26 21.58	23.122	18 21 42.8	10.10	21	8 17 39.39	23.088	15 34 3.2	58.80
22	6 28 40.34	23.132	18 20 39.0	11.15	22	8 19 57.89	23.078	15 28 7.6	59.73
23	6 30 59.16	23.141	N. 18 19 29.0	12.20	23	8 22 16.32	23.068	N. 15 22 6.5	60.65
<b>WEDNESDAY 6.</b>					<b>FRIDAY 8.</b>				
	h m s	s	N. 18 18 12.6	13.25		h m s	s	N. 15 15 59.8	61.57
0	6 33 18.03	23.150	18 18 12.6	13.25	0	8 24 34.70	23.058	15 15 59.8	61.57
1	6 35 36.96	23.159	18 16 50.0	14.30	1	8 26 53.02	23.047	15 9 47.7	62.48
2	6 37 55.94	23.168	18 15 21.0	15.35	2	8 29 11.27	23.036	15 3 30.1	63.38
3	6 40 14.97	23.176	18 13 45.8	16.40	3	8 31 29.45	23.025	14 57 7.1	64.28
4	6 42 34.05	23.183	18 12 4.2	17.45	4	8 33 47.57	23.015	14 50 38.8	65.17
5	6 44 53.16	23.189	18 10 16.4	18.50	5	8 36 5.63	23.004	14 44 5.1	66.06
6	6 47 12.32	23.196	18 8 22.2	19.56	6	8 38 23.62	22.992	14 37 26.1	66.94
7	6 49 31.51	23.201	18 6 21.7	20.60	7	8 40 41.53	22.980	14 30 41.8	67.81
8	6 51 50.73	23.206	18 4 15.0	21.65	8	8 42 59.38	22.969	14 23 52.4	68.68
9	6 54 9.98	23.210	18 2 1.9	22.70	9	8 45 17.16	22.957	14 16 57.7	69.54
10	6 56 29.25	23.214	17 59 42.6	23.74	10	8 47 34.87	22.945	14 9 57.9	70.39
11	6 58 48.55	23.218	17 57 17.0	24.79	11	8 49 52.50	22.933	14 2 53.0	71.24
12	7 1 7.87	23.222	17 54 45.1	25.84	12	8 52 10.07	22.922	13 55 43.0	72.08
13	7 3 27.21	23.224	17 52 6.9	26.88	13	8 54 27.56	22.908	13 48 28.0	72.92
14	7 5 46.56	23.226	17 49 22.5	27.93	14	8 56 44.97	22.896	13 41 8.0	73.74
15	7 8 5.92	23.228	17 46 31.8	28.97	15	8 59 2.31	22.884	13 33 43.1	74.56
16	7 10 25.30	23.230	17 43 34.9	30.00	16	9 1 19.58	22.872	13 26 13.3	75.38
17	7 12 44.68	23.230	17 40 31.8	31.04	17	9 3 36.77	22.859	13 18 38.6	76.18
18	7 15 4.06	23.230	17 37 22.4	32.08	18	9 5 53.89	22.847	13 10 59.1	76.98
19	7 17 23.44	23.230	17 34 6.8	33.11	19	9 8 10.93	22.833	13 3 14.8	77.77
20	7 19 42.82	23.229	17 30 45.1	34.14	20	9 10 27.89	22.821	12 55 25.9	78.55
21	7 22 2.19	23.228	17 27 17.1	35.17	21	9 12 44.78	22.809	12 47 32.2	79.33
22	7 24 21.56	23.227	17 23 43.0	36.19	22	9 15 1.60	22.797	12 39 33.9	80.09
23	7 26 40.92	23.225	17 20 2.8	37.22	23	9 17 18.34	22.783	12 31 31.1	80.85
24	7 29 0.26	23.223	N. 17 16 16.4	38.24	24	9 19 35.00	22.771	N. 12 23 23.7	81.61

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SATURDAY 9.</b>					<b>MONDAY 11.</b>				
	h m s	s	N. 12 23 23.7	81.61		h m s	s	N. 4 41 6.9	107.49
0	9 19 35.00	22.771	12 15 11.8	82.36	0	11 7 40.47	22.354	4 30 21.0	107.80
1	9 21 51.59	22.758	12 6 55.4	83.09	1	11 9 54.59	22.352	4 19 33.3	108.10
2	9 24 8.10	22.746	11 58 34.7	83.82	2	11 12 8.69	22.350	4 8 43.8	108.38
3	9 26 24.54	22.733	11 50 9.6	84.54	3	11 14 22.79	22.349	3 57 52.7	108.65
4	9 28 40.90	22.721	11 41 40.2	85.25	4	11 16 36.88	22.348	3 47 0.0	108.92
5	9 30 57.19	22.708	11 33 6.6	85.96	5	11 18 50.97	22.348	3 36 5.7	109.18
6	9 33 13.40	22.696	11 24 28.7	86.66	6	11 21 5.05	22.348	3 25 9.9	109.43
7	9 35 29.54	22.684	11 15 46.7	87.34	7	11 23 19.14	22.348	3 14 12.6	109.66
8	9 37 45.61	22.672	11 7 0.6	88.02	8	11 25 33.23	22.349	3 3 14.0	109.88
9	9 40 1.60	22.659	10 58 10.4	88.69	9	11 27 47.33	22.350	2 52 14.1	110.09
10	9 42 17.52	22.647	10 49 16.3	89.35	10	11 30 1.43	22.352	2 41 12.9	110.29
11	9 44 33.37	22.636	10 40 18.2	90.02	11	11 32 15.55	22.353	2 30 10.6	110.48
12	9 46 49.15	22.624	10 31 16.1	90.67	12	11 34 29.67	22.355	2 19 7.1	110.67
13	9 49 4.86	22.613	10 22 10.2	91.30	13	11 36 43.81	22.358	2 8 2.5	110.84
14	9 51 20.50	22.602	10 13 0.5	91.93	14	11 38 57.97	22.362	1 56 57.0	110.99
15	9 53 36.08	22.590	9 54 30.0	92.54	15	11 41 12.15	22.365	1 45 50.6	111.14
16	9 55 51.58	22.578	9 45 9.2	93.16	16	11 43 26.35	22.369	1 34 43.3	111.28
17	9 58 7.02	22.568	9 35 44.8	93.77	17	11 45 40.58	22.373	1 23 35.2	111.42
18	10 0 22.40	22.558	9 26 17.0	94.35	18	11 47 54.83	22.378	1 12 26.3	111.53
19	10 2 37.71	22.547	9 16 45.6	94.93	19	11 50 9.12	22.383	1 1 16.8	111.63
20	10 4 52.96	22.537	9 7 10.8	95.52	20	11 52 23.43	22.388	0 50 6.7	111.73
21	10 7 8.15	22.527	8 57 32.6	96.08	21	11 54 37.78	22.395	0 38 56.1	111.82
22	10 9 23.28	22.517		96.64	22	11 56 52.17	22.402		111.89
23	10 11 38.35	22.507			23	11 59 6.60	22.408		
<b>SUNDAY 10.</b>					<b>TUESDAY 12.</b>				
	h m s	s	N. 8 47 51.1	97.18		h m s	s	N. 0 16 33.4	111.95
0	10 13 53.36	22.497	8 38 6.4	97.73	0	12 1 21.07	22.415	0 5 21.5	112.00
1	10 16 8.31	22.488	8 28 18.4	98.26	1	12 3 35.58	22.423	0 5 50.6	112.04
2	10 18 23.21	22.479	8 18 27.3	98.78	2	12 5 50.14	22.430	0 17 3.0	112.07
3	10 20 38.06	22.470	8 8 33.1	99.29	3	12 8 4.74	22.438	0 28 15.5	112.09
4	10 22 52.85	22.461	7 58 35.8	99.79	4	12 10 19.40	22.447	0 39 28.1	112.10
5	10 25 7.59	22.453	7 48 35.6	100.28	5	12 12 34.11	22.457	0 50 40.7	112.10
6	10 27 22.29	22.446	7 38 32.4	100.77	6	12 14 48.88	22.467	1 1 53.3	112.08
7	10 29 36.94	22.438	7 28 26.4	101.23	7	12 17 3.71	22.476	1 13 5.7	112.05
8	10 31 51.54	22.430	7 18 17.6	101.70	8	12 19 18.59	22.486	1 24 17.9	112.02
9	10 34 6.10	22.423	7 8 6.0	102.16	9	12 21 33.54	22.497	1 35 29.9	111.97
10	10 36 20.62	22.416	6 57 51.7	102.61	10	12 23 48.56	22.508	1 46 41.5	111.90
11	10 38 35.09	22.409	6 47 34.7	103.04	11	12 26 3.64	22.520	1 57 52.7	111.83
12	10 40 49.53	22.403	6 37 15.2	103.46	12	12 28 18.80	22.532	2 9 3.5	111.75
13	10 43 3.93	22.397	6 26 53.2	103.88	13	12 30 34.02	22.543	2 20 13.7	111.66
14	10 45 18.30	22.392	6 16 28.7	104.28	14	12 32 49.32	22.557	2 31 23.4	111.55
15	10 47 32.63	22.386	6 6 1.8	104.68	15	12 35 4.70	22.570	2 42 32.3	111.43
16	10 49 46.93	22.381	5 55 32.5	105.07	16	12 37 20.16	22.583	2 53 40.6	111.31
17	10 52 1.20	22.377	5 45 0.9	105.44	17	12 39 35.70	22.597	3 4 48.0	111.16
18	10 54 15.45	22.372	5 34 27.2	105.81	18	12 41 51.32	22.611	3 15 54.5	111.01
19	10 56 29.67	22.368	5 23 51.2	106.17	19	12 44 7.03	22.626	3 27 0.1	110.85
20	10 58 43.87	22.365	5 13 13.1	106.52	20	12 46 22.83	22.641	3 38 4.7	110.68
21	11 0 58.05	22.361	5 2 33.0	106.85	21	12 48 38.72	22.656	3 49 8.2	110.49
22	11 3 12.20	22.358	4 51 50.9	107.18	22	12 50 54.70	22.672	4 0 10.6	110.29
23	11 5 26.34	22.356			23	12 53 10.78	22.688		110.08
24	11 7 40.47	22.354	N. 4 41 6.9	107.49	24	12 55 26.95	22.703	S. 4 11 11.7	110.08

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
WEDNESDAY 13.					FRIDAY 15.				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	12 55 26.95	22.703	S. 4 11 11.7	110.08	0	14 46 47.56	23.747	S. 12 13 11.2	86.28
1	12 57 43.22	22.720	4 22 11.5	109.86	1	14 49 10.11	23.770	12 21 46.6	85.51
2	12 59 59.59	22.738	4 33 10.0	109.63	2	14 51 32.80	23.793	12 30 17.3	84.73
3	13 2 16.07	22.755	4 44 7.1	109.38	3	14 53 55.63	23.816	12 38 43.3	83.93
4	13 4 32.65	22.772	4 55 2.6	109.13	4	14 56 18.59	23.838	12 47 4.5	83.13
5	13 6 49.33	22.789	5 5 56.6	108.86	5	14 58 41.69	23.862	12 55 20.9	82.32
6	13 9 6.12	22.808	5 16 48.9	108.58	6	15 1 4.93	23.884	13 3 32.3	81.48
7	13 11 23.03	22.827	5 27 39.5	108.28	7	15 3 28.30	23.907	13 11 38.7	80.65
8	13 13 40.05	22.846	5 38 28.3	107.98	8	15 5 51.81	23.928	13 19 40.1	79.80
9	13 15 57.18	22.865	5 49 15.3	107.67	9	15 8 15.44	23.950	13 27 36.3	78.94
10	13 18 14.43	22.884	6 0 0.4	107.35	10	15 10 39.21	23.972	13 35 27.4	78.08
11	13 20 31.79	22.903	6 10 43.5	107.01	11	15 13 3.10	23.993	13 43 13.3	77.21
12	13 22 49.27	22.924	6 21 24.5	106.65	12	15 15 27.12	24.014	13 50 53.9	76.33
13	13 25 6.88	22.945	6 32 3.3	106.29	13	15 17 51.27	24.035	13 58 29.2	75.43
14	13 27 24.61	22.965	6 42 40.0	105.92	14	15 20 15.54	24.055	14 5 59.0	74.52
15	13 29 42.46	22.985	6 53 14.4	105.53	15	15 22 39.93	24.075	14 13 23.4	73.61
16	13 32 0.43	23.006	7 3 46.4	105.13	16	15 25 4.44	24.095	14 20 42.3	72.69
17	13 34 18.53	23.028	7 14 16.0	104.73	17	15 27 29.07	24.115	14 27 55.7	71.76
18	13 36 36.76	23.049	7 24 43.1	104.31	18	15 29 53.82	24.134	14 35 3.4	70.81
19	13 38 55.12	23.071	7 35 7.7	103.88	19	15 32 18.68	24.153	14 42 5.4	69.86
20	13 41 13.61	23.093	7 45 29.6	103.43	20	15 34 43.65	24.171	14 49 1.7	68.91
21	13 43 32.23	23.114	7 55 48.8	102.98	21	15 37 8.73	24.188	14 55 52.3	67.94
22	13 45 50.98	23.137	8 6 5.3	102.51	22	15 39 33.91	24.206	15 2 37.0	66.97
23	13 48 9.87	23.159	S. 8 16 18.9	102.03	23	15 41 59.20	24.223	S. 15 9 15.9	65.98
THURSDAY 14.					SATURDAY 16.				
0	13 50 28.89	23.182	S. 8 26 29.6	101.53	0	15 44 24.59	24.240	S. 15 15 48.8	64.99
1	13 52 48.05	23.205	8 36 37.3	101.03	1	15 46 50.08	24.257	15 22 15.8	63.99
2	13 55 7.35	23.228	8 46 41.9	100.51	2	15 49 15.67	24.273	15 28 36.7	62.98
3	13 57 26.78	23.250	8 56 43.4	99.99	3	15 51 41.35	24.288	15 34 51.6	61.97
4	13 59 46.35	23.273	9 6 41.8	99.45	4	15 54 7.12	24.303	15 41 0.3	60.94
5	14 2 6.06	23.297	9 16 36.8	98.90	5	15 56 32.98	24.317	15 47 2.9	59.92
6	14 4 25.91	23.320	9 26 28.6	98.34	6	15 58 58.92	24.331	15 52 59.4	58.89
7	14 6 45.90	23.343	9 36 16.9	97.76	7	16 1 24.95	24.344	15 58 49.6	57.84
8	14 9 6.03	23.368	9 46 1.7	97.18	8	16 3 51.05	24.357	16 4 33.5	56.78
9	14 11 26.31	23.392	9 55 43.0	96.58	9	16 6 17.23	24.369	16 10 11.0	55.73
10	14 13 46.73	23.415	10 5 20.7	95.98	10	16 8 43.48	24.381	16 15 42.3	54.67
11	14 16 7.29	23.438	10 14 54.7	95.36	11	16 11 9.80	24.392	16 21 7.1	53.60
12	14 18 27.99	23.462	10 24 25.0	94.73	12	16 13 36.18	24.403	16 26 25.5	52.53
13	14 20 48.83	23.486	10 33 51.5	94.08	13	16 16 2.63	24.413	16 31 37.4	51.44
14	14 23 9.82	23.510	10 43 14.0	93.43	14	16 18 29.14	24.423	16 36 42.8	50.36
15	14 25 30.95	23.534	10 52 32.6	92.77	15	16 20 55.70	24.431	16 41 41.7	49.27
16	14 27 52.23	23.558	11 1 47.2	92.09	16	16 23 22.31	24.439	16 46 34.0	48.17
17	14 30 13.65	23.582	11 10 57.7	91.41	17	16 25 48.97	24.447	16 51 19.7	47.06
18	14 32 35.21	23.605	11 20 4.1	90.71	18	16 28 15.67	24.453	16 55 58.7	45.95
19	14 34 56.91	23.629	11 29 6.2	89.99	19	16 30 42.41	24.459	17 0 31.1	44.84
20	14 37 18.76	23.653	11 38 4.0	89.28	20	16 33 9.18	24.465	17 4 56.8	43.73
21	14 39 40.75	23.677	11 46 57.5	88.55	21	16 35 35.99	24.471	17 9 15.8	42.61
22	14 42 2.88	23.700	11 55 46.6	87.81	22	16 38 2.83	24.475	17 13 28.1	41.48
23	14 44 25.15	23.723	12 4 31.2	87.05	23	16 40 29.69	24.478	17 17 33.5	40.34
24	14 46 47.56	23.747	S. 12 13 11.2	86.28	24	16 42 56.57	24.482	S. 17 21 32.2	39.22

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>SUNDAY 17.</b>					<b>TUESDAY 19.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	16 42 56.57	24.482	S. 17 21 32.2	39.22	0	18 39 24.62	23.769	S. 18 16 42.0	15.77
1	16 45 23.47	24.484	17 25 24.1	38.08	1	18 41 47.14	23.738	18 15 4.2	16.83
2	16 47 50.38	24.486	17 29 9.1	36.93	2	18 44 9.47	23.705	18 13 20.0	17.91
3	16 50 17.30	24.486	17 32 47.2	35.78	3	18 46 31.60	23.672	18 11 29.3	18.98
4	16 52 44.21	24.486	17 36 18.5	34.64	4	18 48 53.53	23.638	18 9 32.3	20.03
5	16 55 11.13	24.486	17 39 42.9	33.49	5	18 51 15.26	23.605	18 7 28.9	21.09
6	16 57 38.04	24.484	17 43 0.4	32.34	6	18 53 36.79	23.571	18 5 19.2	22.14
7	17 0 4.94	24.483	17 46 11.0	31.18	7	18 55 58.11	23.536	18 3 3.2	23.18
8	17 2 31.83	24.480	17 49 14.6	30.02	8	18 58 19.22	23.500	18 0 41.0	24.22
9	17 4 58.70	24.477	17 52 11.2	28.86	9	19 0 40.11	23.464	17 58 12.6	25.25
10	17 7 25.55	24.473	17 55 0.9	27.71	10	19 3 0.79	23.428	17 55 38.1	26.27
11	17 9 52.37	24.467	17 57 43.7	26.54	11	19 5 21.25	23.391	17 52 57.4	27.28
12	17 12 19.15	24.461	18 0 19.4	25.38	12	19 7 41.48	23.353	17 50 10.7	28.29
13	17 14 45.90	24.455	18 2 48.2	24.21	13	19 10 1.49	23.316	17 47 17.9	29.30
14	17 17 12.61	24.448	18 5 9.9	23.04	14	19 12 21.27	23.278	17 44 19.1	30.29
15	17 19 39.27	24.440	18 7 24.7	21.88	15	19 14 40.82	23.238	17 41 14.4	31.28
16	17 22 5.89	24.432	18 9 32.4	20.71	16	19 17 0.13	23.199	17 38 3.8	32.26
17	17 24 32.45	24.422	18 11 33.2	19.54	17	19 19 19.21	23.161	17 34 47.3	33.23
18	17 26 58.95	24.411	18 13 26.9	18.37	18	19 21 38.06	23.121	17 31 25.0	34.20
19	17 29 25.38	24.400	18 15 13.6	17.20	19	19 23 56.66	23.081	17 27 56.9	35.16
20	17 31 51.75	24.389	18 16 53.3	16.04	20	19 26 15.03	23.041	17 24 23.1	36.11
21	17 34 18.05	24.377	18 18 26.1	14.88	21	19 28 33.15	22.999	17 20 43.6	37.05
22	17 36 44.27	24.363	18 19 51.8	13.70	22	19 30 51.02	22.958	17 16 58.4	37.99
23	17 39 10.40	24.348	S. 18 21 10.5	12.53	23	19 33 8.65	22.917	S. 17 13 7.7	38.92
<b>MONDAY 18.</b>					<b>WEDNESDAY 20.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	17 41 36.45	24.334	S. 18 22 22.2	11.38	0	19 35 26.02	22.875	S. 17 9 11.4	39.84
1	17 44 2.41	24.319	18 23 27.0	10.22	1	19 37 43.15	22.833	17 5 9.6	40.75
2	17 46 28.28	24.303	18 24 24.8	9.05	2	19 40 0.02	22.791	17 1 2.4	41.65
3	17 48 54.05	24.286	18 25 15.6	7.88	3	19 42 16.64	22.748	16 56 49.8	42.55
4	17 51 19.71	24.268	18 25 59.4	6.73	4	19 44 33.00	22.705	16 52 31.8	43.44
5	17 53 45.27	24.250	18 26 36.3	5.58	5	19 46 49.10	22.662	16 48 8.5	44.32
6	17 56 10.71	24.230	18 27 6.3	4.43	6	19 49 4.94	22.619	16 43 40.0	45.18
7	17 58 36.03	24.211	18 27 29.4	3.27	7	19 51 20.53	22.576	16 39 6.3	46.05
8	18 1 1.24	24.191	18 27 45.5	2.12	8	19 53 35.85	22.532	16 34 27.4	46.91
9	18 3 26.32	24.169	18 27 54.8	0.98	9	19 55 50.91	22.488	16 29 43.4	47.76
10	18 5 51.27	24.147	18 27 57.2	0.17	10	19 58 5.71	22.445	16 24 54.3	48.60
11	18 8 16.08	24.124	18 27 52.8	1.31	11	20 0 20.25	22.401	16 20 0.2	49.43
12	18 10 40.76	24.101	18 27 41.5	2.45	12	20 2 34.52	22.356	16 15 1.2	50.24
13	18 13 5.29	24.077	18 27 23.4	3.58	13	20 4 48.52	22.311	16 9 57.3	51.06
14	18 15 29.68	24.053	18 26 58.6	4.71	14	20 7 2.25	22.267	16 4 48.5	51.87
15	18 17 53.92	24.027	18 26 26.9	5.84	15	20 9 15.72	22.223	15 59 34.9	52.66
16	18 20 18.00	24.000	18 25 48.5	6.96	16	20 11 28.02	22.178	15 54 16.6	53.45
17	18 22 41.92	23.973	18 25 3.4	8.07	17	20 13 41.85	22.133	15 48 53.5	54.23
18	18 25 5.68	23.946	18 24 11.7	9.18	18	20 15 54.51	22.088	15 43 25.8	55.00
19	18 27 29.27	23.918	18 23 13.2	10.30	19	20 18 6.91	22.044	15 37 53.5	55.76
20	18 29 52.70	23.890	18 22 8.1	11.39	20	20 20 19.04	21.998	15 32 16.7	56.52
21	18 32 15.95	23.860	18 20 56.5	12.49	21	20 22 30.89	21.953	15 26 35.3	57.27
22	18 34 39.02	23.830	18 19 38.2	13.59	22	20 24 42.48	21.908	15 20 49.5	58.00
23	18 37 1.91	23.800	18 18 13.4	14.68	23	20 26 53.79	21.863	15 14 59.3	58.73
24	18 39 24.62	23.769	S. 18 16 42.0	15.77	24	20 29 4.84	21.819	S. 15 9 4.8	59.45

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>THURSDAY 21.</b>					<b>SATURDAY 23.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	20 29 4.84	21.819	S. 15 9 4.8	59.45	0	22 8 54.56	19.874	S. 9 16 39.2	84.35
1	20 31 15.62	21.774	15 3 5.9	60.16	1	22 10 53.70	19.840	9 8 12.1	84.68
2	20 33 26.13	21.729	14 57 2.9	60.86	2	22 12 52.64	19.808	8 59 43.1	85.00
3	20 35 36.37	21.684	14 50 55.6	61.56	3	22 14 51.40	19.777	8 51 12.1	85.32
4	20 37 46.34	21.639	14 44 44.2	62.24	4	22 16 49.96	19.744	8 42 39.2	85.63
5	20 39 56.04	21.594	14 38 28.7	62.92	5	22 18 48.33	19.713	8 34 4.5	85.94
6	20 42 5.47	21.550	14 32 9.2	63.58	6	22 20 46.52	19.683	8 25 27.9	86.24
7	20 44 14.64	21.506	14 25 45.7	64.25	7	22 22 44.53	19.653	8 16 49.6	86.53
8	20 46 23.54	21.462	14 19 18.2	64.90	8	22 24 42.35	19.623	8 8 9.6	86.82
9	20 48 32.18	21.418	14 12 46.9	65.54	9	22 26 40.00	19.593	7 59 27.8	87.10
10	20 50 40.55	21.373	14 6 11.7	66.18	10	22 28 37.47	19.563	7 50 44.4	87.37
11	20 52 48.65	21.328	13 59 32.8	66.80	11	22 30 34.76	19.535	7 41 59.4	87.63
12	20 54 56.49	21.285	13 52 50.1	67.42	12	22 32 31.89	19.508	7 33 12.8	87.89
13	20 57 4.07	21.241	13 46 3.7	68.03	13	22 34 28.85	19.480	7 24 24.7	88.15
14	20 59 11.38	21.198	13 39 13.8	68.63	14	22 36 25.65	19.453	7 15 35.0	88.40
15	21 1 18.44	21.154	13 32 20.2	69.23	15	22 38 22.29	19.426	7 6 43.9	88.63
16	21 3 25.23	21.111	13 25 23.1	69.81	16	22 40 18.76	19.399	6 57 51.4	88.87
17	21 5 31.77	21.068	13 18 22.5	70.38	17	22 42 15.08	19.374	6 48 57.5	89.10
18	21 7 38.05	21.025	13 11 18.5	70.95	18	22 44 11.25	19.348	6 40 2.2	89.33
19	21 9 44.07	20.983	13 4 11.1	71.51	19	22 46 7.26	19.323	6 31 5.6	89.54
20	21 11 49.84	20.940	12 57 0.4	72.06	20	22 48 3.13	19.300	6 22 7.7	89.75
21	21 13 55.35	20.898	12 49 46.4	72.60	21	22 49 58.86	19.276	6 13 8.6	89.95
22	21 16 0.61	20.856	12 42 29.2	73.13	22	22 51 54.44	19.252	6 4 8.3	90.15
23	21 18 5.62	20.814	S. 12 35 8.8	73.67	23	22 53 49.88	19.229	S. 5 55 6.8	90.34
<b>FRIDAY 22.</b>					<b>SUNDAY 24.</b>				
	h m s	s	° ' "	"		h m s	s	° ' "	"
0	21 20 10.38	20.773	S. 12 27 45.2	74.18	0	22 55 45.19	19.207	S. 5 46 4.2	90.53
1	21 22 14.90	20.732	12 20 18.6	74.69	1	22 57 40.36	19.185	5 37 0.5	90.71
2	21 24 19.17	20.691	12 12 48.9	75.20	2	22 59 35.41	19.163	5 27 55.7	90.88
3	21 26 23.19	20.650	12 5 16.2	75.70	3	23 1 30.32	19.142	5 18 49.9	91.05
4	21 28 26.97	20.610	11 57 40.5	76.18	4	23 3 25.11	19.123	5 9 43.1	91.21
5	21 30 30.51	20.570	11 50 2.0	76.66	5	23 5 19.79	19.103	5 0 35.4	91.37
6	21 32 33.81	20.530	11 42 20.6	77.13	6	23 7 14.34	19.082	4 51 26.7	91.53
7	21 34 36.87	20.491	11 34 36.4	77.59	7	23 9 8.77	19.063	4 42 17.1	91.68
8	21 36 39.70	20.452	11 26 49.5	78.05	8	23 11 3.10	19.045	4 33 6.6	91.81
9	21 38 42.29	20.413	11 18 59.8	78.51	9	23 12 57.31	19.027	4 23 55.4	91.94
10	21 40 44.65	20.374	11 11 7.4	78.94	10	23 14 51.42	19.009	4 14 43.3	92.07
11	21 42 46.78	20.337	11 3 12.5	79.38	11	23 16 45.42	18.993	4 5 30.5	92.19
12	21 44 48.69	20.299	10 55 14.9	79.81	12	23 18 39.33	18.976	3 56 17.0	92.32
13	21 46 50.37	20.261	10 47 14.8	80.23	13	23 20 33.13	18.959	3 47 2.7	92.43
14	21 48 51.82	20.223	10 39 12.2	80.63	14	23 22 26.84	18.944	3 37 47.8	92.53
15	21 50 53.05	20.187	10 31 7.2	81.03	15	23 24 20.46	18.929	3 28 32.3	92.63
16	21 52 54.07	20.152	10 22 59.8	81.43	16	23 26 13.99	18.915	3 19 16.2	92.73
17	21 54 54.87	20.115	10 14 50.0	81.82	17	23 28 7.44	18.901	3 9 59.6	92.82
18	21 56 55.45	20.079	10 6 37.9	82.20	18	23 30 0.80	18.887	3 0 42.4	92.91
19	21 58 55.82	20.044	9 58 23.6	82.58	19	23 31 54.08	18.874	2 51 24.7	92.99
20	22 0 55.98	20.009	9 50 7.0	82.95	20	23 33 47.29	18.862	2 42 6.5	93.07
21	22 2 55.93	19.974	9 41 48.2	83.31	21	23 35 40.43	18.850	2 32 47.9	93.13
22	22 4 55.67	19.940	9 33 27.3	83.66	22	23 37 33.49	18.838	2 23 28.9	93.20
23	22 6 55.21	19.907	9 25 4.3	84.01	23	23 39 26.49	18.828	2 14 9.5	93.26
24	22 8 54.56	19.874	S. 9 16 39.2	84.35	24	23 41 19.43	18.818	S. 2 4 49.8	93.31

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>MONDAY 25.</b>					<b>WEDNESDAY 27.</b>				
	h m s	s				h m s	s		
0	23 41 19.43	18.818	S. 2° 4' 49".8	93.31	0	1 11 25.72	18.922	N. 5° 19' 40".8	89.97
1	23 43 12.30	18.808	1 55 29.8	93.36	1	1 13 19.29	18.937	5 28 40.0	89.78
2	23 45 5.12	18.798	1 46 9.5	93.41	2	1 15 12.96	18.952	5 37 38.1	89.58
3	23 46 57.88	18.789	1 36 48.9	93.44	3	1 17 6.71	18.967	5 46 34.9	89.37
4	23 48 50.59	18.781	1 27 28.2	93.48	4	1 19 0.56	18.983	5 55 30.5	89.16
5	23 50 43.25	18.773	1 18 7.2	93.51	5	1 20 54.51	18.999	6 4 24.8	88.94
6	23 52 35.87	18.766	1 8 46.1	93.53	6	1 22 48.55	19.016	6 13 17.8	88.72
7	23 54 28.44	18.759	0 59 24.9	93.54	7	1 24 42.70	19.034	6 22 9.4	88.49
8	23 56 20.98	18.753	0 50 3.6	93.56	8	1 26 36.96	19.052	6 30 59.7	88.27
9	23 58 13.48	18.748	0 40 42.2	93.58	9	1 28 31.32	19.069	6 39 48.6	88.03
10	0 0 5.95	18.742	0 31 20.7	93.58	10	1 30 25.79	19.088	6 48 36.0	87.78
11	0 1 58.38	18.737	0 21 59.3	93.57	11	1 32 20.38	19.108	6 57 22.0	87.53
12	0 3 50.79	18.733	0 12 37.9	93.56	12	1 34 15.08	19.128	7 6 6.4	87.28
13	0 5 43.18	18.729	S. 0° 3' 16.6	93.55	13	1 36 9.91	19.148	7 14 49.3	87.03
14	0 7 35.54	18.726	N. 0° 6' 4.7	93.53	14	1 38 4.85	19.168	7 23 30.7	86.76
15	0 9 27.89	18.724	0 15 25.8	93.52	15	1 39 59.92	19.189	7 32 10.4	86.48
16	0 11 20.23	18.722	0 24 46.8	93.48	16	1 41 55.12	19.211	7 40 48.5	86.21
17	0 13 12.55	18.719	0 34 7.6	93.45	17	1 43 50.45	19.233	7 49 24.9	85.93
18	0 15 4.86	18.718	0 43 28.2	93.42	18	1 45 45.91	19.254	7 57 59.6	85.64
19	0 16 57.17	18.718	0 52 48.6	93.38	19	1 47 41.50	19.277	8 6 32.6	85.34
20	0 18 49.48	18.718	1 2 8.7	93.33	20	1 49 37.23	19.301	8 15 3.7	85.04
21	0 20 41.79	18.718	1 11 28.5	93.28	21	1 51 33.11	19.325	8 23 33.1	84.74
22	0 22 34.10	18.719	1 20 48.0	93.22	22	1 53 29.13	19.348	8 32 0.6	84.43
23	0 24 26.42	18.721	N. 1° 30' 7.1	93.16	23	1 55 25.29	19.373	N. 8° 40' 26.3	84.12
<b>TUESDAY 26.</b>					<b>THURSDAY 28.</b>				
0	0 26 18.75	18.723	N. 1° 39' 25.9	93.09	0	1 57 21.60	19.398	N. 8° 48' 50.0	83.79
1	0 28 11.10	18.726	1 48 44.2	93.01	1	1 59 18.06	19.423	8 57 11.8	83.47
2	0 30 3.46	18.728	1 58 2.0	92.93	2	2 1 14.67	19.448	9 5 31.6	83.13
3	0 31 55.84	18.732	2 7 19.4	92.86	3	2 3 11.44	19.475	9 13 49.3	82.78
4	0 33 48.24	18.736	2 16 36.3	92.77	4	2 5 8.37	19.502	9 22 5.0	82.44
5	0 35 40.67	18.740	2 25 52.6	92.68	5	2 7 5.46	19.528	9 30 18.6	82.09
6	0 37 33.12	18.745	2 35 8.4	92.58	6	2 9 2.71	19.555	9 38 30.1	81.73
7	0 39 25.61	18.751	2 44 23.6	92.48	7	2 11 0.12	19.583	9 46 39.4	81.36
8	0 41 18.13	18.757	2 53 38.1	92.37	8	2 12 57.71	19.612	9 54 46.4	80.99
9	0 43 10.69	18.764	3 2 52.0	92.26	9	2 14 55.46	19.640	10 2 51.3	80.62
10	0 45 3.30	18.772	3 12 5.2	92.14	10	2 16 53.39	19.669	10 10 53.8	80.23
11	0 46 55.95	18.778	3 21 17.7	92.02	11	2 18 51.49	19.698	10 18 54.0	79.84
12	0 48 48.64	18.786	3 30 29.5	91.89	12	2 20 49.77	19.728	10 26 51.9	79.45
13	0 50 41.38	18.795	3 39 40.4	91.76	13	2 22 48.23	19.758	10 34 47.4	79.04
14	0 52 34.18	18.804	3 48 50.6	91.63	14	2 24 46.87	19.788	10 42 40.4	78.63
15	0 54 27.03	18.813	3 57 59.9	91.48	15	2 26 45.69	19.819	10 50 31.0	78.22
16	0 56 19.94	18.824	4 7 8.3	91.33	16	2 28 44.70	19.850	10 58 19.1	77.80
17	0 58 12.92	18.835	4 16 15.9	91.18	17	2 30 43.89	19.882	11 6 4.6	77.37
18	1 0 5.96	18.846	4 25 22.5	91.02	18	2 32 43.28	19.913	11 13 47.5	76.93
19	1 1 59.07	18.857	4 34 28.1	90.86	19	2 34 42.85	19.945	11 21 27.8	76.49
20	1 3 52.24	18.868	4 43 32.8	90.69	20	2 36 42.62	19.978	11 29 5.4	76.04
21	1 5 45.49	18.882	4 52 36.4	90.52	21	2 38 42.59	20.011	11 36 40.3	75.59
22	1 7 38.82	18.895	5 1 39.0	90.33	22	2 40 42.75	20.043	11 44 12.5	75.13
23	1 9 32.23	18.908	5 10 40.4	90.15	23	2 42 43.11	20.077	11 51 41.8	74.66
24	1 11 25.72	18.922	N. 5° 19' 40.8	89.97	24	2 44 43.68	20.112	N. 11° 59' 8.4	74.19

## MEAN TIME.

## THE MOON'S RIGHT ASCENSION AND DECLINATION.

Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .	Hour.	Right Ascension.	Var. in 10 <sup>m</sup> .	Declination.	Var. in 10 <sup>m</sup> .
<b>FRIDAY 29.</b>					<b>SUNDAY 31.</b>				
	h m s	s	N. 11 59 8.4	74.19		h m s	s	N. 16 47 9.1	43.04
0	2 44 43.68	20.112	12 6 32.1	73.70	0	4 25 32.65	21.937	16 51 24.9	42.21
1	2 46 44.45	20.145	12 13 52.8	73.21	1	4 27 44.39	21.976	16 55 35.6	41.37
2	2 48 45.42	20.178	12 21 10.6	72.73	2	4 29 56.36	22.014	16 59 41.3	40.53
3	2 50 46.59	20.213	12 28 25.5	72.23	3	4 32 8.56	22.053	17 3 42.0	39.69
4	2 52 47.98	20.249	12 35 37.3	71.71	4	4 34 20.99	22.091	17 7 37.6	38.83
5	2 54 49.58	20.284	12 42 46.0	71.19	5	4 36 33.65	22.129	17 11 28.0	37.97
6	2 56 51.39	20.319	12 49 51.6	70.67	6	4 38 46.54	22.167	17 15 13.2	37.10
7	2 58 53.41	20.354	12 56 54.1	70.14	7	4 40 59.65	22.204	17 18 53.2	36.23
8	3 0 55.64	20.390	13 3 53.3	69.60	8	4 43 12.99	22.242	17 22 27.9	35.34
9	3 2 58.09	20.427	13 10 49.3	69.07	9	4 45 26.55	22.278	17 25 57.3	34.45
10	3 5 0.76	20.463	13 17 42.1	68.52	10	4 47 40.33	22.316	17 29 21.3	33.56
11	3 7 3.65	20.500	13 24 31.5	67.95	11	4 49 54.34	22.353	17 32 40.0	32.66
12	3 9 6.76	20.537	13 31 17.5	67.38	12	4 52 8.56	22.388	17 35 53.2	31.74
13	3 11 10.09	20.573	13 38 0.1	66.82	13	4 54 23.00	22.425	17 39 0.9	30.83
14	3 13 13.64	20.611	13 44 39.3	66.24	14	4 56 37.66	22.462	17 42 3.2	29.92
15	3 15 17.42	20.648	13 51 15.0	65.66	15	4 58 52.54	22.497	17 44 59.9	28.98
16	3 17 21.42	20.686	13 57 47.2	65.06	16	5 1 7.62	22.532	17 47 51.0	28.05
17	3 19 25.65	20.724	14 4 15.7	64.46	17	5 3 22.92	22.568	17 50 36.5	27.11
18	3 21 30.11	20.762	14 10 40.7	63.85	18	5 5 38.43	22.602	17 53 16.3	26.16
19	3 23 34.79	20.799	14 17 1.9	63.23	19	5 7 54.14	22.636	17 55 50.4	25.21
20	3 25 39.70	20.838	14 23 19.5	62.62	20	5 10 10.06	22.670	17 58 18.8	24.25
21	3 27 44.85	20.877	14 29 33.3	61.98	21	5 12 26.18	22.703	18 0 41.4	23.28
22	3 29 50.22	20.915	14 35 43.3	61.34	22	5 14 42.50	22.737	N. 18 2 58.2	22.32
23	3 31 55.83	20.954			23	5 16 59.02	22.769		
<b>SATURDAY 30.</b>					<b>MONDAY, JAN. 1, 1923.</b>				
0	3 34 1.67	20.993	14 41 49.4	60.70	0	5 19 15.73	22.802	N. 18 5 9.2	21.34
1	3 36 7.75	21.032	14 47 51.7	60.05					
2	3 38 14.06	21.071	14 53 50.0	59.39					
3	3 40 20.60	21.110	14 59 44.4	58.73					
4	3 42 27.38	21.149	15 5 34.7	58.05					
5	3 44 34.39	21.188	15 11 21.0	57.37					
6	3 46 41.64	21.228	15 17 3.2	56.68					
7	3 48 49.13	21.268	15 22 41.2	55.98					
8	3 50 56.85	21.307	15 28 15.0	55.28					
9	3 53 4.81	21.347	15 33 44.5	54.57					
10	3 55 13.01	21.386	15 39 9.8	53.86					
11	3 57 21.44	21.426	15 44 30.8	53.13					
12	3 59 30.12	21.466	15 49 47.4	52.39					
13	4 1 39.03	21.505	15 54 59.5	51.65					
14	4 3 48.18	21.544	16 0 7.2	50.91					
15	4 5 57.56	21.583	16 5 10.4	50.15					
16	4 8 7.18	21.623	16 10 9.0	49.39					
17	4 10 17.04	21.663	16 15 3.1	48.62					
18	4 12 27.14	21.703	16 19 52.5	47.84					
19	4 14 37.47	21.742	16 24 37.2	47.06					
20	4 16 48.04	21.781	16 29 17.2	46.28					
21	4 18 58.84	21.820	16 33 52.5	45.48					
22	4 21 9.88	21.859	16 38 22.9	44.66					
23	4 23 21.15	21.898	16 42 48.4	43.85					
24	4 25 32.65	21.937	N. 16 47 9.1	43.04					

## PHASES OF THE MOON.

Dec.	h m
3	○ Full Moon - - 23 23.6
11	☾ Last Quarter - - 4 40.7
18	● New Moon - - 0 20.0
25	☽ First Quarter - 17 53.1

Dec.	h
14	☾ Perigee - - - 3.5
26	☾ Apogee - - - 4.1

## MEAN TIME.

Date.	Apparent Right Ascension.			Sid. Time of Semid. pass. Merid.	Apparent Declination.			Semidiameter.	Hor. Par.	Log. of True Dist. from the Earth.			Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.	
	Noon.				Noon.					Noon.				Noon.			Noon.				
	h	m	s	s	°	'	"	"	"	°	'	"	h	m	°	'	"	°	'	"	
Jan.	1	18 58	2 85	0 17	S. 24 43	39 0	2 34	6 17	0 1538496	0 16 7	289 29 53 0	S. 6 11 43 9	9 6508167								
	2	19 5 10 66	0 17	24 35 57 2	2 35	6 19	0 1522323	0 19 9	292 31 50 4	6 21 32 8	6475766										
	3	19 12 18 83	0 17	24 26 43 6	2 36	6 22	0 1504117	0 23 1	295 36 44 6	6 30 25 8	6440678										
	4	19 19 27 17	0 17	24 15 57 5	2 37	6 25	0 1483806	0 26 3	298 44 52 8	6 38 18 9	6402901										
	5	19 26 35 50	0 17	24 3 38 2	2 38	6 28	0 1461307	0 29 5	301 56 32 0	6 45 7 6	6362440										
	6	19 33 43 58	0 17	23 49 45 3	2 40	6 32	0 1436533	0 32 7	305 11 59 7	6 50 47 3	6319304										
	7	19 40 51 20	0 17	S. 23 34 18 2	2 41	6 36	0 1409385	0 35 9	308 31 34 2	S. 6 55 12 6	9 6273511										
	8	19 47 58 08	0 18	23 17 16 7	2 43	6 40	0 1379755	0 39 1	311 55 34 7	6 58 17 7	6225091										
	9	19 55 3 95	0 18	22 58 40 6	2 45	6 45	0 1347522	0 42 2	315 24 20 8	6 59 56 6	6174086										
	10	20 2 8 50	0 18	22 38 30 2	2 47	6 50	0 1312556	0 45 4	318 58 12 9	7 0 2 6	6120548										
	11	20 9 11 37	0 18	22 16 45 5	2 49	6 56	0 1274715	0 48 5	322 37 32 1	6 58 28 4	6064557										
	12	20 16 12 19	0 18	21 53 27 4	2 51	6 62	0 1233843	0 51 6	326 22 40 2	6 55 6 5	6006206										
	13	20 23 10 52	0 18	S. 21 28 36 7	2 54	6 69	0 1189775	0 54 6	330 13 59 1	S. 6 49 48 8	9 5945621										
	14	20 30 5 88	0 18	21 2 15 0	2 57	6 76	0 1142330	0 57 6	334 11 51 4	6 42 27 0	5882960										
	15	20 36 57 71	0 19	20 34 23 9	2 60	6 84	0 1091315	1 0 5	338 16 39 6	6 32 52 5	5818412										
	16	20 43 45 40	0 19	20 5 6 0	2 63	6 93	0 1036529	1 3 3	342 28 46 1	6 20 56 6	5752212										
	17	20 50 28 22	0 19	19 34 24 5	2 67	7 03	0 0977754	1 6 1	346 48 32 6	6 630 9	5684647										
	18	20 57 5 38	0 19	19 2 23 1	2 71	7 13	0 0914769	1 8 8	351 16 20 1	5 49 27 1	5616050										
	19	21 3 35 95	0 19	S. 18 29 6 9	2 75	7 24	0 0847340	1 11 3	355 52 27 8	S. 5 29 38 1	9 5546823										
	20	21 9 58 89	0 20	17 54 41 2	2 80	7 36	0 0775240	1 13 8	0 37 12 8	5 6 57 7	5477432										
	21	21 16 13 01	0 20	17 19 13 5	2 85	7 49	0 0698237	1 16 1	5 30 49 5	4 41 21 7	5408412										
	22	21 22 16 96	0 20	16 42 52 6	2 90	7 64	0 0616117	1 18 2	10 33 27 9	4 12 48 3	5340369										
	23	21 28 9 20	0 21	16 5 47 9	2 96	7 79	0 0528677	1 20 1	15 45 13 7	3 41 18 6	5273988										
	24	21 33 48 05	0 21	15 28 11 5	3 02	7 96	0 0435752	1 21 8	21 6 6 2	3 6 57 8	5210013										
	25	21 39 11 59	0 21	S. 14 50 16 9	3 09	8 14	0 0337217	1 23 2	26 35 58 0	S. 2 29 55 4	9 5149257										
	26	21 44 17 72	0 22	14 12 19 8	3 17	8 34	0 0233015	1 24 4	32 14 33 2	1 50 26 2	5092572										
	27	21 49 4 16	0 22	13 34 38 0	3 25	8 55	0 0123161	1 25 2	38 1 26 8	1 8 50 6	5040835										
	28	21 53 28 43	0 23	12 57 31 2	3 34	8 78	0 0007776	1 25 6	43 56 3 9	S. 0 25 35 0	4994919										
	29	21 57 27 93	0 23	12 21 21 2	3 43	9 03	9 9887108	1 25 6	49 57 38 8	N. 0 18 48 7	4955661										
	30	22 0 59 94	0 24	11 46 32 0	3 53	9 30	0 9761551	1 25 2	56 5 15 5	1 3 43 5	4923828										
	Feb.	31	22 4 1 72	0 25	S. 11 13 28 6	3 63	9 58	9 9631674	1 24 3	62 17 47 5	N. 1 48 28 4	9 4900075									
		1	22 6 30 59	0 25	10 42 37 4	3 75	9 88	9 9498233	1 22 8	68 33 59 4	2 32 19 9	4884912									
		2	22 8 24 04	0 26	10 14 25 2	3 87	10 19	9 9362199	1 20 7	74 52 28 1	3 14 34 3	4878676									
		3	22 9 39 83	0 27	9 49 18 4	3 99	10 52	9 9224755	1 17 9	81 11 45 3	3 54 29 3	4881509									
		4	22 10 16 19	0 28	9 27 42 1	4 12	10 86	9 9087309	1 14 5	87 30 20 3	4 31 26 2	4893343									
		5	22 10 11 94	0 29	9 9 59 1	4 25	11 21	8 8951471	1 10 5	93 46 42 6	5 4 52 1	4913915									
6		22 9 26 68	0 30	S. 8 56 28 6	4 38	11 55	9 8819022	1 5 8	99 59 25 3	N. 5 34 20 8	9 4942779										
7		22 8 0 91	0 31	8 47 25 0	4 51	11 89	8 8691882	1 0 5	106 7 7 2	5 59 33 9	4979329										
8		22 5 56 19	0 32	8 42 56 8	4 64	12 23	8 8572036	0 54 5	112 8 36 1	6 20 20 9	5022836										
9		22 3 15 21	0 33	8 43 5 4	4 76	12 54	8 8461457	0 47 9	118 2 49 4	6 36 39 1	5072485										
10		22 0 1 81	0 34	8 47 44 4	4 87	12 83	8 8362016	0 40 7	123 48 56 2	6 48 32 4	5127412										
11		21 56 20 91	0 34	8 56 39 9	4 97	13 09	8 8275375	0 33 1	129 26 16 9	6 56 10 7	5186741										
12		21 52 18 35	0 34	S. 9 9 30 1	5 05	13 31	9 8202906	0 25 2	134 54 23 3	N. 6 59 48 1	9 5249602										
13		21 48 0 70	0 34	9 25 46 5	5 12	13 49	8 8145596	0 17 0	140 12 57 9	6 59 41 9	5315169										
14		21 43 34 88	0 35	9 44 55 7	5 17	13 62	8 8104000	0 8 6	145 21 52 8	6 56 11 5	5382670										
15		21 39 7 89	0 35	10 6 20 5	5 20	13 70	8 8078218	{ 0 23 50 } 23 44 0	150 21 8 5	6 49 37 3	5451397										
16		21 34 46 46	0 35	S. 10 29 22 8	5 21	13 73	9 8067907	23 44 0	155 10 52 4	N. 6 40 19 7	9 5520717										



# MERCURY, 1922.

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## MEAN TIME.

Date.	Apparent Right Ascension.			Sid. Time of Semid. pass Merid.	Apparent Declination.			Semidiameter.	Hor. Par.	Log. of True Dist. from the Earth.			Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.	Log. of Rad. Vect.	
	Noon.				Noon.					Noon.				Noon.					Noon.
	h	m	s	s	°	'	"	"	"		h	m		°	'	"	°	'	"
Feb. 16	21	34	46.46	0.35	S. 10	29	22.8	5.21	13.73	9.8067907	23	44.0	155	10	52.4	N. 6	40	19.7	9.5520717
17	21	30	36.72	0.35	10	53	25.4	5.20	13.72	.8072337	23	36.2	159	51	17.7	6	28	38.6	.5590064
18	21	26	44.02	0.35	11	17	52.9	5.18	13.66	.8090455	23	28.7	164	22	41.9	6	14	52.9	.5658946
19	21	23	12.74	0.35	11	42	14.2	5.15	13.56	.8120978	23	21.7	168	45	25.8	5	59	20.3	.5726944
20	21	20	6.30	0.35	12	6	2.0	5.10	13.43	.8162472	23	15.2	172	59	52.8	5	42	17.0	.5793694
21	21	17	27.10	0.34	12	28	53.9	5.04	13.28	.8213451	23	9.1	177	6	27.5	5	23	57.6	.5858895
22	21	15	16.67	0.34	S. 12	50	32.0	4.97	13.10	9.8272442	23	3.5	181	5	35.6	N. 5	4	35.3	9.5922292
23	21	13	35.71	0.33	13	10	42.5	4.90	12.90	.8338032	22	58.3	184	57	42.8	4	44	21.8	.5983678
24	21	12	24.27	0.33	13	29	15.2	4.82	12.69	.8408916	22	53.7	188	43	15.1	4	23	27.2	.6042886
25	21	11	41.89	0.32	13	46	3.1	4.74	12.47	.8483912	22	49.5	192	22	37.9	4	2	0.7	.6099778
26	21	11	27.69	0.32	14	1	1.5	4.65	12.25	.8561975	22	45.7	195	56	16.0	3	40	10.0	.6154250
27	21	11	40.52	0.31	14	14	7.6	4.57	12.03	.8642204	22	42.4	199	24	33.5	3	18	2.1	.6206215
28	21	12	19.03	0.31	S. 14	25	20.3	4.48	11.81	9.8723824	22	39.5	202	47	53.5	N. 2	55	42.8	9.6255614
Mar. 1	21	13	21.76	0.31	14	34	39.4	4.40	11.59	.8806181	22	37.0	206	6	38.2	2	33	17.2	.6302397
2	21	14	47.20	0.30	14	42	5.6	4.32	11.37	.8888738	22	34.8	209	21	9.1	2	10	49.7	.6346536
3	21	16	33.83	0.30	14	47	40.1	4.24	11.15	.8971050	22	32.9	212	31	46.5	1	48	24.2	.6388005
4	21	18	40.17	0.29	14	51	24.5	4.16	10.94	.9052758	22	31.4	215	38	49.8	1	26	3.8	.6426792
5	21	21	4.79	0.29	14	53	20.5	4.08	10.74	.9133578	22	30.1	218	42	37.6	1	3	51.5	.6462894
6	21	23	46.32	0.28	S. 14	53	30.0	4.01	10.55	9.9213285	22	29.1	221	43	27.7	N. 0	41	49.6	9.6496306
7	21	26	43.47	0.28	14	51	55.2	3.93	10.36	.9291706	22	28.3	224	41	37.1	N. 0	20	0.3	.6527033
8	21	29	55.04	0.27	14	48	37.9	3.86	10.18	.9368710	22	27.8	227	37	22.0	S. 0	1	34.6	.6555083
9	21	33	19.91	0.27	14	43	40.2	3.79	10.00	.9444203	22	27.5	230	30	58.0	0	22	53.4	.6580463
10	21	36	57.06	0.26	14	37	3.9	3.73	9.83	.9518120	22	27.3	233	22	40.1	0	43	54.7	.6603182
11	21	40	45.55	0.26	14	28	51.0	3.67	9.67	.9590419	22	27.3	236	12	42.8	1	4	37.2	.6623252
12	21	44	44.48	0.25	S. 14	19	3.1	3.61	9.51	9.9661075	22	27.5	239	1	20.0	S. 1	24	59.6	9.6640682
13	21	48	53.09	0.25	14	7	42.1	3.56	9.36	.9730079	22	27.9	241	48	45.4	1	45	0.9	.6655481
14	21	53	10.63	0.24	13	54	49.5	3.50	9.22	.9797435	22	28.4	244	35	12.0	2	4	40.0	.6667658
15	21	57	36.46	0.24	13	40	27.0	3.45	9.08	.9863150	22	29.0	247	20	52.9	2	23	55.7	.6677219
16	22	2	9.98	0.23	13	24	35.9	3.40	8.95	.9927248	22	29.7	250	6	0.6	2	42	47.2	.6684172
17	22	6	50.63	0.23	13	7	17.9	3.35	8.82	.9998749	22	30.5	252	50	47.7	3	1	13.3	.6688522
18	22	11	37.96	0.23	S. 12	48	34.2	3.30	8.70	0.0050679	22	31.4	255	35	26.4	S. 3	19	13.0	9.6690271
19	22	16	31.49	0.22	12	28	26.3	3.26	8.58	.0110072	22	32.5	258	20	9.0	3	36	45.0	.6689421
20	22	21	30.86	0.22	12	6	55.3	3.22	8.47	.0167954	22	33.7	261	5	7.6	3	53	48.3	.6685969
21	22	26	35.72	0.22	11	44	2.6	3.17	8.36	.0224360	22	34.9	263	50	34.6	4	10	21.5	.6679914
22	22	31	45.74	0.21	11	19	49.3	3.13	8.25	.0279317	22	36.2	266	36	42.1	4	26	23.2	.6671253
23	22	37	0.67	0.21	10	54	16.6	3.09	8.15	.0332862	22	37.5	269	23	42.6	4	41	51.9	.6659979
24	22	42	20.27	0.21	S. 10	27	25.7	3.06	8.05	0.0385017	22	39.0	272	11	48.7	S. 4	56	45.9	9.6646085
25	22	47	44.35	0.21	9	59	17.7	3.02	7.96	.0435811	22	40.5	275	1	13.1	5	11	3.3	.6629564
26	22	53	12.74	0.20	9	29	53.3	2.99	7.87	.0485268	22	42.1	277	52	9.0	5	24	42.1	.6610407
27	22	58	45.30	0.20	8	59	13.9	2.95	7.78	.0533410	22	43.8	280	44	49.6	5	37	40.1	.6588602
28	23	4	21.93	0.20	8	27	20.5	2.92	7.70	.0580251	22	45.5	283	39	28.7	5	49	54.7	.6564141
29	23	10	2.54	0.19	7	54	14.0	2.89	7.62	.0625804	22	47.3	286	36	20.6	6	1	23.4	.6537014
30	23	15	47.09	0.19	S. 7	19	55.6	2.86	7.54	0.0670083	22	49.2	289	35	39.8	S. 6	12	3.0	9.6507211
31	23	21	35.54	0.19	6	44	26.1	2.83	7.47	.0713085	22	51.1	292	37	41.5	6	21	50.2	.6474727
Apr. 1	23	27	27.90	0.19	6	7	46.6	2.81	7.40	.0754812	22	53.1	295	42	41.4	6	30	41.4	.6439554
2	23	33	24.19	0.19	5	29	58.2	2.78	7.33	.0795258	22	55.2	298	50	55.9	6	38	32.5	.6401693
3	23	39	24.43	0.18	S. 4	51	1.9	2.76	7.26	0.0834409	22	57.3	302	2	41.7	S. 6	45	19.2	9.6361147

## MEAN TIME.

Date.	Apparent Right Ascension.			Sid. Time of Semid. pass <sup>8</sup> Merid.	Apparent Declination.			Semidiameter.	Hor. Par.	Log. of True Dist. from the Earth.			Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.
	Noon.				Noon.					Noon.				Noon.			Noon.			
	h	m	s	s	°	'	"	"	"	°	'	"	h	m	s	°	'	"		
Apr.	3	23	39	24.43	0.18	S.	4 51	1.9	2.76	7.26	0.0834409	22 57.3	302 2 41.7	S.	6 45	19.2	9.6361147			
	4	23	45	28.71	0.18		4 10	58.9	2.74	7.20	0.0872245	22 59.5	305 18 16.8		6 50	56.6	9.6317929			
	5	23	51	37.10	0.18		3 29	50.3	2.72	7.14	0.0908738	23 1.8	308 37 59.2		6 55	19.5	9.6272053			
	6	23	57	49.71	0.18		2 47	37.3	2.69	7.08	0.0943858	23 4.1	312 2 8.2		6 58	22.1	9.6223552			
	7	0	4	6.66	0.18		2 42	1.4	2.67	7.03	0.0977553	23 6.5	315 31 3.4		6 59	58.3	9.6172465			
	8	0	10	28.10	0.18		1 20	3.9	2.65	6.97	0.1009775	23 9.0	319 5 5.3		7 0	1.2	9.6118849			
	9	0	16	54.17	0.18	S.	0 34	46.5	2.63	6.92	0.1040461	23 11.6	322 44 35.0	S.	6 58	23.8	9.6062781			
	10	0	23	25.07	0.17	N.	0 11	29.1	2.61	6.88	0.1069537	23 14.3	326 29 54.2		6 54	58.4	9.6004356			
	11	0	30	0.96	0.17		0 58	40.9	2.60	6.84	0.1096915	23 17.0	330 21 25.0		6 49	37.0	9.5943703			
	12	0	36	42.04	0.17		1 46	46.5	2.58	6.80	0.1122497	23 19.8	334 19 29.8		6 42	11.3	9.5880977			
	13	0	43	28.51	0.17		2 35	43.6	2.56	6.76	0.1146171	23 22.7	338 24 31.3		6 32	32.5	9.5816374			
	14	0	50	20.58	0.17		3 25	29.3	2.55	6.72	0.1167811	23 25.8	342 36 51.8		6 20	32.1	9.5750124			
	15	0	57	18.42	0.17	N.	4 16	0.3	2.54	6.69	0.1187279	23 29.0	346 56 52.9	S.	6 6	1.6	9.5682520			
	16	1	4	22.25	0.17		5 7	12.7	2.53	6.66	0.1204416	23 32.2	351 24 55.7		5 48	52.8	9.5613896			
17	1	11	32.21	0.17		5 59	2.4	2.52	6.64	0.1219055	23 35.5	356 1 19.3		5 28	58.5	9.5544655				
18	1	18	48.47	0.17		6 51	24.4	2.51	6.62	0.1231010	23 38.9	0 46 20.8		5 6	12.8	9.5475265				
19	1	26	11.13	0.17		7 44	13.2	2.50	6.61	0.1240085	23 42.4	5 40 14.2		4 40	31.3	9.5406263				
20	1	33	40.26	0.17		8 37	22.4	2.50	6.60	0.1246066	23 46.1	10 43 9.7		4 11	52.4	9.5338258				
21	1	41	15.88	0.17	N.	9 30	44.9	2.50	6.60	0.1248737	23 49.9	15 55 12.7	S.	3 40	17.3	9.5271937				
22	1	48	57.92	0.17		10 24	12.8	2.50	6.60	0.1247868	23 53.8	21 16 22.4		3 5	51.2	9.5208051				
23	1	56	46.23	0.17		11 17	37.2	2.50	6.61	0.1243225	23 57.8	26 46 30.8		2 28	44.0	9.5147406				
24	2	4	40.60	0.17		12 10	48.4	2.51	6.62	0.1234583	*	32 25 22.1		1 49	10.5	9.5090859				
25	2	12	40.66	0.17		13 3	35.8	2.52	6.64	0.1221716	0 1.8	38 12 31.0		1 7	31.4	9.5039287				
26	2	20	45.96	0.17		13 55	48.1	2.53	6.67	0.1204415	0 6.0	44 7 22.0	S.	0 24	13.1	9.4993563				
27	2	28	55.90	0.18	N.	14 47	13.5	2.54	6.70	0.1182495	0 10.2	50 9 9.4	N.	0 20	12.2	9.4954525				
28	2	37	9.76	0.18		15 37	39.4	2.56	6.74	0.1155797	0 14.5	56 16 56.7		1 5	7.3	9.4922933				
29	2	45	26.70	0.18		16 26	53.4	2.58	6.79	0.1124196	0 18.9	62 29 37.0		1 49	51.2	9.4899440				
30	2	53	45.77	0.18		17 14	42.9	2.60	6.85	0.1087613	0 23.3	68 45 54.7		2 33	40.5	9.4884550				
May	1	3	2	5.90	0.18		18 0	55.9	2.62	6.91	0.1046012	0 27.7	75 4 26.6		3 15	51.2	9.4878597			
	2	3	10	25.95	0.19		18 45	20.9	2.65	6.99	0.0999410	0 32.1	81 23 44.2		3 55	41.2	9.4881709			
	3	3	18	44.71	0.19	N.	19 27	47.4	2.69	7.07	0.0947867	0 36.4	87 42 16.7	N.	4 32	32.1	9.4893821			
	4	3	27	0.95	0.19		20 8	6.2	2.72	7.17	0.0891497	0 40.8	93 58 33.8		5 5	51.0	9.4914661			
	5	3	35	13.43	0.20		20 46	9.2	2.75	7.27	0.0830459	0 45.1	100 11 8.5		5 35	11.9	9.4943776			
	6	3	43	20.92	0.20		21 21	50.1	2.80	7.38	0.0764936	0 49.3	106 18 40.2		6 0	16.8	9.4980556			
	7	3	51	22.25	0.20		21 55	4.2	2.85	7.50	0.0695160	0 53.3	112 19 56.6		6 20	55.5	9.5024270			
	8	3	59	16.26	0.21		22 25	48.1	2.89	7.63	0.0621376	0 57.3	118 13 55.7		6 37	5.3	9.5074101			
	9	4	7	1.90	0.21	N.	22 54	0.1	2.94	7.76	0.0543846	1 1.1	123 59 46.8	N.	6 48	50.6	9.5129181			
	10	4	14	38.19	0.22		23 19	39.7	3.00	7.91	0.0462845	1 4.8	129 36 50.7		6 56	21.1	9.5188634			
	11	4	22	4.19	0.22		23 42	47.8	3.06	8.06	0.0378647	1 8.3	135 4 39.5		6 59	51.2	9.5251593			
	12	4	29	19.08	0.23		24 3	26.4	3.12	8.23	0.0291525	1 11.6	140 22 56.2		6 59	38.3	9.5317235			
	13	4	36	22.08	0.23		24 21	38.1	3.19	8.40	0.0201753	1 14.7	145 31 33.1		6 56	1.9	9.5384788			
	14	4	43	12.48	0.24		24 37	26.7	3.26	8.58	0.0109587	1 17.6	150 30 30.8		6 49	22.3	9.5453548			
	15	4	49	49.65	0.24	N.	24 50	56.1	3.33	8.77	0.0015278	1 20.2	155 19 57.1	N.	6 39	59.8	9.5522879			
	16	4	56	12.97	0.25		25 2	11.1	3.40	8.97	9.9919070	1 22.7	160 0 5.2		6 28	14.6	9.5592221			
	17	5	2	21.88	0.25		25 11	16.4	3.48	9.17	0.9821194	1 24.9	164 31 12.8		6 14	25.3	9.5661084			
	18	5	8	15.87	0.26		25 18	17.3	3.56	9.38	0.9721879	1 26.8	168 53 40.9		5 58	49.6	9.5729049			
	19	5	13	54.44	0.27	N.	25 23	19.1	3.64	9.60	9.9621337	1 28.5	173 7 52.7	N.	5 41	43.7	9.5795756			

# MERCURY, 1922.

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## MEAN TIME.

Date.	Apparent Right Ascension.			Sid. Time of Semid. pass Merid.	Apparent Declination.			Semidiameter.	Hor. Par.	Log. of True Dist. from the Earth.			Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.	
	Noon.				Noon.					Noon.				Noon.			Noon.				
	h	m	s	s	°	'	"	"	"	°	'	"	h	m	°	'	"	°	'	"	
May 19	5	13	54.44	0.27	N.25	23	19.1	3.64	9.60	9.9621337	1	28.5	173	7	52.7	N. 5	41	43.7	9.5795756		
20	5	19	17.10	0.28		25	26	27.2	3.73	9.83	9.9519786	1	29.9	177	14	13.1		5	23	22.2	9.5860904
21	5	24	23.40	0.29		25	27	46.9	3.82	10.06	9.9417435	1	31.1	181	13	7.5		5	3	58.1	9.5924242
22	5	29	12.89	0.30		25	27	23.8	3.91	10.30	9.9314494	1	32.1	185	5	2.0		4	43	43.1	9.5985563
23	5	33	45.15	0.30		25	25	23.1	4.01	10.55	9.9211175	1	32.7	188	50	22.3		4	22	47.4	9.6044701
24	5	37	59.74	0.31		25	21	50.1	4.10	10.81	9.9107695	1	32.9	192	29	33.9		4	1	20.1	9.6101520
25	5	41	56.26	0.31	N.25	16	50.2	4.20	11.07	9.9004281	1	32.8	196	3	1.6	N. 3	39	28.8	9.6155914		
26	5	45	34.30	0.32		25	10	28.2	4.30	11.33	9.8901171	1	32.4	199	31	9.4		3	17	20.4	9.6207802
27	5	48	53.46	0.32		25	2	49.4	4.40	11.60	9.8798612	1	31.8	202	54	20.4		2	55	0.8	9.6257119
28	5	51	53.40	0.33		24	53	58.6	4.50	11.88	9.8696868	1	30.9	206	12	56.9		2	32	35.1	9.6303822
29	5	54	33.76	0.34		24	44	0.6	4.61	12.16	9.8596227	1	29.6	209	27	20.1		2	10	7.7	9.6347875
30	5	56	54.23	0.35		24	33	0.3	4.72	12.44	9.8497000	1	28.0	212	37	50.5		1	47	42.2	9.6389262
31	5	58	54.56	0.36	N.24	21	2.2	4.83	12.72	9.8399511	1	26.0	215	44	47.3	N. 1	25	22.1	9.6427965		
June 1	6	0	34.56	0.37		24	8	11.1	4.94	13.00	9.8304116	1	23.7	218	48	29.3		1	3	10.1	9.6463983
2	6	1	54.07	0.37		23	54	31.6	5.04	13.28	9.8211201	1	21.0	221	49	14.1		0	41	8.5	9.6497311
3	6	2	53.08	0.38		23	40	8.4	5.15	13.56	9.8121172	1	18.1	224	47	18.7	N. 0	19	19.6	9.6527957	
4	6	3	31.65	0.38		23	25	6.3	5.26	13.84	9.8034466	1	14.8	227	42	59.3	S. 0	2	14.8	9.6555922	
5	6	3	49.98	0.39		23	9	30.1	5.36	14.10	9.7951545	1	11.2	230	36	31.4		0	23	33.1	9.6581218
6	6	3	48.42	0.39	N.22	53	24.9	5.45	14.36	9.7872889	1	7.2	233	28	10.2	S. 0	44	33.8	9.6603855		
7	6	3	27.48	0.40		22	36	55.9	5.55	14.61	9.7798995	1	2.9	236	18	10.0		1	5	15.7	9.6623844
8	6	2	47.86	0.41		22	20	8.6	5.64	14.84	9.7730379	0	58.3	239	6	44.7		1	25	37.4	9.6641190
9	6	1	50.45	0.41		22	3	8.9	5.72	15.05	9.7667551	0	53.4	241	54	8.0		1	45	38.0	9.6655908
10	6	0	36.36	0.42		21	46	2.9	5.79	15.25	9.7611021	0	48.2	244	40	33.0		2	5	16.4	9.6668002
11	5	59	6.90	0.42		21	28	57.4	5.85	15.43	9.7561280	0	42.8	247	26	12.6		2	24	31.4	9.6677482
12	5	57	23.63	0.42	N.21	11	59.2	5.91	15.58	9.7518796	0	37.1	250	11	19.5	S. 2	43	22.1	9.6684354		
13	5	55	28.27	0.43		20	55	15.9	5.96	15.70	9.7483989	0	31.3	252	56	6.1		3	1	47.4	9.6688623
14	5	53	22.77	0.43		20	38	55.1	6.00	15.80	9.7457244	0	25.3	255	40	44.7		3	19	46.2	9.6690290
15	5	51	9.23	0.43		20	23	5.0	6.02	15.87	9.7438867	0	19.2	258	25	27.6		3	37	17.4	9.6689358
16	5	48	49.89	0.43		20	7	53.6	6.03	15.91	9.7429103	0	12.9	261	10	26.9		3	54	19.7	9.6685825
17	5	46	27.10	0.43		19	53	29.2	6.03	15.91	9.7428110	0	6.6	263	55	54.9		4	10	52.0	9.6679690
18	5	44	3.25	0.43	N.19	40	0.0	6.02	15.88	9.7435966	{ 0 23 } 23 54.0	266	42	3.9	S. 4	26	52.7	9.6670947			
19	5	41	40.77	0.42		19	27	33.7	6.00	15.82	9.7452650	23	47.8	269	29	6.2		4	42	20.3	9.6659591
20	5	39	22.04	0.42		19	16	17.6	5.97	15.73	9.7478061	23	41.6	272	17	14.5		4	57	13.2	9.6645615
21	5	37	9.36	0.41		19	6	18.6	5.92	15.60	9.7512008	23	35.6	275	6	41.6		5	11	29.4	9.6629012
22	5	35	4.93	0.41		18	57	42.4	5.86	15.45	9.7554221	23	29.8	277	57	40.5		5	25	7.0	9.6609773
23	5	33	10.80	0.40		18	50	33.7	5.80	15.28	9.7604364	23	24.2	280	50	24.6		5	38	3.6	9.6578886
24	5	31	28.83	0.40	N.18	44	56.6	5.72	15.08	9.7662038	23	18.8	283	45	7.6	S. 5	50	16.9	9.6563342		
25	5	30	0.71	0.39		18	40	53.6	5.63	14.85	9.7726797	23	13.7	286	42	3.8		6	1	44.1	9.6536131
26	5	28	47.93	0.39		18	38	26.2	5.54	14.61	9.7798155	23	8.8	289	41	27.9		6	12	22.1	9.6506245
27	5	27	51.78	0.38		18	37	34.9	5.44	14.35	9.7875611	23	4.2	292	43	34.8		6	22	7.6	9.6473675
28	5	27	13.33	0.38		18	38	18.8	5.34	14.08	9.7958638	22	59.9	295	48	40.5		6	30	57.0	9.6438419
29	5	26	53.52	0.37		18	40	36.0	5.23	13.80	9.8046712	22	56.0	298	57	1.3		6	38	46.2	9.6400474
30	5	26	53.06	0.37	N.18	44	23.5	5.12	13.51	9.8139309	22	52.4	302	8	54.0	S. 6	45	30.8	9.6359846		
July 1	5	27	12.55	0.36		18	49	37.6	5.01	13.21	9.8235922	22	49.1	305	24	36.4		6	51	6.0	9.6316545
2	5	27	52.45	0.35		18	56	13.6	4.90	12.91	9.8336051	22	46.1	308	44	26.8		6	55	26.5	9.6270588
3	5	28	53.09	0.34		19	4	6.0	4.79	12.60	9.8439220	22	43.5	312	8	44.4		6	58	26.5	9.6222005
4	5	30	14.72	0.33	N.19	13	8.8	4.67	12.30	9.8544970	22	41.3	315	37	48.8	S. 6	59	59.8	9.6170839		

## MEAN TIME.

Date.	Apparent Right Ascension.			Sid. Time of Semid. pass. Merid.	Apparent Declination.			Semi-diameter.	Hor. Par.	Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.		
	Noon.				Noon.							Noon.			Noon.					
	h	m	s	s	°	'	"	"	"		h	m	°	'	"	°	'	"		
July	4	5	30	14.72	0.33	N. 19	13	8.8	4.67	12.30	9.8544970	22	41.3	315	37	48.8	S. 6	59	59.8	9.6170839
	5	5	31	57.50	0.32	19	23	15.2	4.55	12.00	.8652868	22	39.4	319	12	0.5	6	59	59.7	.6117145
	6	5	34	1.53	0.31	19	34	18.0	4.44	11.70	.8762498	22	37.9	322	51	40.8	6	58	19.1	.6061003
	7	5	36	26.85	0.30	19	46	9.3	4.33	11.41	.8873467	22	36.7	326	37	11.2	6	54	50.2	.6002507
	8	5	39	13.46	0.30	19	58	41.2	4.22	11.12	.8985403	22	35.9	330	28	53.9	6	49	25.1	.5941787
	9	5	42	21.33	0.29	20	11	44.8	4.11	10.83	.9097946	22	35.4	334	27	11.3	6	41	55.3	.5879001
	10	5	45	50.40	0.28	N. 20	25	11.1	4.01	10.55	9.9210752	22	35.3	338	32	26.1	S. 6	32	12.3	9.5814343
	11	5	49	40.60	0.27	20	38	50.8	3.91	10.28	.9323494	22	35.5	342	45	0.5	6	20	7.4	.5748047
	12	5	53	51.81	0.27	20	52	34.0	3.81	10.02	.9435849	22	36.0	347	5	16.3	6	5	32.0	.5680405
	13	5	58	23.90	0.26	21	6	10.5	3.71	9.77	.9547503	22	36.9	351	33	34.3	5	48	18.2	.5611755
	14	6	3	16.70	0.26	21	19	29.6	3.62	9.52	.9658142	22	38.2	356	10	13.7	5	28	18.7	.5542502
	15	6	8	30.00	0.25	21	32	20.4	3.53	9.29	.9767455	22	39.8	0	55	31.5	5	5	27.5	.5473115
	16	6	14	3.53	0.25	N. 21	44	31.6	3.44	9.06	9.9875132	22	41.7	5	49	41.6	S. 4	39	40.6	9.5404135
	17	6	19	56.96	0.24	21	55	51.6	3.35	8.84	9.9980857	22	44.0	10	52	54.1	4	10	56.1	.5336172
	18	6	26	9.88	0.24	22	6	8.5	3.27	8.63	0.0084316	22	46.6	16	5	14.0	3	39	15.6	.5269916
	19	6	32	41.74	0.23	22	15	10.3	3.20	8.43	.0185184	22	49.5	21	26	40.5	3	4	44.4	.5206118
	20	6	39	31.93	0.23	22	22	44.9	3.13	8.24	.0283140	22	52.7	26	57	5.5	2	27	32.3	.5145588
	21	6	46	39.66	0.22	22	28	40.6	3.06	8.07	.0377863	22	56.1	32	36	12.6	1	47	54.6	.5089183
	22	6	54	3.99	0.22	N. 22	32	45.7	3.00	7.90	0.0469039	22	59.8	38	23	36.4	S. 1	6	11.9	9.5037780
	23	7	1	43.83	0.21	22	34	49.5	2.94	7.74	.0556359	23	3.8	44	18	41.1	S. 0	22	51.1	.4992252
Aug.	24	7	9	37.91	0.21	22	34	41.7	2.88	7.59	.0639536	23	8.0	50	20	40.5	N. 0	21	35.7	.4953432
	25	7	17	44.81	0.20	22	32	13.5	2.83	7.46	.0718298	23	12.3	56	28	37.8	1	6	31.1	.4922085
	26	7	26	2.95	0.20	22	27	17.2	2.78	7.33	.0792416	23	16.8	62	41	26.1	1	51	14.0	.4898853
	27	7	34	30.63	0.20	22	19	46.9	2.74	7.22	.0861686	23	21.5	68	57	49.2	2	35	0.8	.4884236
	28	7	43	6.05	0.19	N. 22	9	38.5	2.70	7.11	0.0925960	23	26.3	75	16	23.7	N. 3	17	7.8	9.4878562
	29	7	51	47.34	0.19	21	56	49.7	2.66	7.02	.0985131	23	31.1	81	35	41.2	3	56	52.8	.4881958
	30	8	0	32.64	0.19	21	41	20.5	2.63	6.93	.1039145	23	35.9	87	54	10.9	4	33	37.5	.4894344
	31	8	9	20.12	0.19	21	23	12.6	2.60	6.85	.1087996	23	40.8	94	10	22.3	5	6	49.4	.4915450
	1	8	18	8.00	0.18	21	2	29.6	2.57	6.78	.1131740	23	45.7	100	22	48.7	5	36	2.6	.4944812
	2	8	26	54.65	0.18	20	39	16.7	2.55	6.72	.1170466	23	50.5	106	30	9.7	6	0	59.4	.4981820
	3	8	35	38.56	0.18	N. 20	13	40.6	2.53	6.67	0.1204315	23	55.3	112	31	13.3	N. 6	21	29.7	9.5025734
	4	8	44	18.38	0.18	19	45	49.0	2.51	6.63	.1233449	23	59.9	118	24	57.9	6	37	31.2	.5075741
	5	8	52	52.98	0.18	19	15	50.4	2.50	6.59	.1258069	*	*	124	10	33.2	6	49	8.3	.5130970
	6	9	1	21.36	0.17	18	43	54.0	2.49	6.56	.1278387	0	4.4	129	47	20.2	6	56	31.1	.5190543
	7	9	9	42.72	0.17	18	10	9.1	2.48	6.53	.1294631	0	8.8	135	14	51.5	6	59	54.0	.5253597
	8	9	17	56.45	0.17	17	34	45.4	2.48	6.52	.1307026	0	13.1	140	32	50.2	6	59	34.6	.5319309
	9	9	26	2.08	0.17	N. 16	57	52.1	2.47	6.50	0.1315807	0	17.3	145	41	9.0	N. 6	55	52.2	9.5386909
	10	9	33	59.28	0.17	16	19	38.3	2.47	6.49	.1321197	0	21.3	150	39	48.9	6	49	7.2	.5455693
	11	9	41	47.83	0.17	15	40	12.9	2.47	6.49	.1323412	0	25.2	155	28	57.6	6	39	40.0	.5525032
	12	9	49	27.63	0.17	14	59	44.1	2.47	6.49	.1322661	0	28.9	160	8	48.7	6	27	50.6	.5594365
	13	9	56	58.67	0.17	-14	18	19.7	2.47	6.49	.1319135	0	32.5	164	39	39.8	6	13	57.8	.5663205
	14	10	4	21.00	0.17	13	36	7.2	2.47	6.50	.1313013	0	35.9	169	1	52.2	5	58	19.1	.5731135
	15	10	11	34.74	0.17	N. 12	53	13.3	2.48	6.52	0.1304459	0	39.2	173	15	49.1	N. 5	41	10.6	9.5797798
	16	10	18	40.05	0.17	12	9	44.5	2.48	6.53	.1293625	0	42.4	177	21	55.2	5	22	46.9	.5862894
	17	10	25	37.13	0.17	11	25	46.5	2.49	6.55	.1280644	0	45.4	181	20	36.3	5	3	21.1	.5926172
	18	10	32	26.17	0.17	10	41	24.8	2.49	6.57	.1265639	0	48.3	185	12	18.2	4	43	4.7	.5987427
	19	10	39	7.43	0.17	N. 9	56	44.4	2.50	6.60	0.1248719	0	51.0	188	57	26.7	N. 4	22	7.9	9.6046494

## MEAN TIME.

Date.	Apparent Right Ascension.			Sid. Time of Semid. pass Merid.	Apparent Declination.			Semidiameter.	Hor. Par.	Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.			
	Noon.				Noon.							Noon.			Noon.						
	h	m	s	s	N.	°	'	"	"	"		h	m	s	N.	°	'	"			
Aug. 19	10	39	7.43	0.17	N.	9	56	44.4	2.50	6.60	0.1248719	0	51.0	188	57	26.7	N.	4	22	7.9	9.6046494
20	10	45	41.15	0.17		9	11	49.9	2.51	6.63	.1229978	0	53.6	192	36	27.4		4	0	39.6	.6103240
21	10	52	7.57	0.17		8	26	45.6	2.52	6.66	.1209499	0	56.1	196	9	44.8		3	38	47.7	.6157555
22	10	58	26.94	0.17		7	41	35.5	2.53	6.69	.1187353	0	58.5	199	37	43.0		3	16	38.9	.6209366
23	11	4	39.51	0.17		6	56	23.1	2.55	6.73	.1163605	1	0.8	203	0	45.2		2	54	19.1	.6258603
24	11	10	45.51	0.17		6	11	11.9	2.56	6.77	.1138306	1	3.0	206	19	13.5		2	31	53.2	.6305225
25	11	16	45.17	0.17	N.	5	26	5.0	2.58	6.81	0.1111499	1	5.0	209	33	29.2	N.	2	9	25.8	9.6349196
26	11	22	38.70	0.17		4	41	5.4	2.60	6.85	.1083220	1	7.0	212	43	52.7		1	47	0.5	.6390499
27	11	28	26.32	0.18		3	56	15.8	2.62	6.90	.1053496	1	8.8	215	50	43.3		1	24	40.5	.6429119
28	11	34	8.21	0.18		3	11	38.9	2.64	6.95	.1022348	1	10.5	218	54	19.5		1	2	28.8	.6465053
29	11	39	44.54	0.18		2	27	17.2	2.66	7.01	.0989790	1	12.2	221	54	59.1		0	40	27.6	.6498297
30	11	45	15.49	0.18		1	43	13.0	2.68	7.06	.0955830	1	13.8	224	52	59.0	N.	0	18	39.2	.6528859
31	11	50	41.19	0.18	N.	0	59	28.5	2.71	7.12	0.0920470	1	15.3	227	48	35.4	S.	0	2	54.8	9.6556743
Sept. 1	11	56	1.77	0.18	N.	0	16	6.0	2.73	7.18	.0883704	1	16.7	230	42	3.8		0	24	12.6	.6581957
2	12	1	17.33	0.18	S.	0	26	52.5	2.75	7.24	.0845525	1	18.0	233	33	39.3		0	45	12.7	.6604512
3	12	6	27.96	0.18		1	9	24.7	2.77	7.31	.0805917	1	19.2	236	23	36.2		1	5	54.0	.6624417
4	12	11	33.73	0.19		1	51	28.7	2.80	7.38	.0764864	1	20.3	239	12	8.5		1	26	15.1	.6641682
5	12	16	34.68	0.19		2	33	2.3	2.83	7.45	.0722339	1	21.4	241	59	29.8		1	46	15.1	.6656317
6	12	21	30.83	0.19	S.	3	14	3.5	2.86	7.53	0.0678317	1	22.4	244	45	53.3	S.	2	5	52.7	9.6668332
7	12	26	22.17	0.19		3	54	30.2	2.89	7.61	.0632763	1	23.3	247	31	31.7		2	25	7.0	.6677731
8	12	31	8.68	0.20		4	34	20.2	2.92	7.69	.0585644	1	24.1	250	16	37.7		2	43	56.9	.6684522
9	12	35	50.28	0.20		5	13	31.3	2.95	7.78	.0536923	1	24.8	253	1	23.9		3	2	21.4	.6688710
10	12	40	26.88	0.20		5	52	1.1	2.99	7.87	.0486557	1	25.5	255	46	2.5		3	20	19.3	.6690297
11	12	44	58.36	0.20		6	29	47.3	3.02	7.96	.0434500	1	26.1	258	30	45.7		3	37	49.7	.6689283
12	12	49	24.55	0.21	S.	7	6	47.2	3.06	8.06	0.0380706	1	26.6	261	15	45.7	S.	3	54	51.1	9.6685670
13	12	53	45.25	0.21		7	42	58.2	3.10	8.16	.0325128	1	27.0	264	1	14.8		4	11	22.4	.6679454
14	12	58	0.20	0.21		8	18	17.4	3.14	8.27	.0267717	1	27.3	266	47	25.3		4	27	22.1	.6670632
15	13	2	9.12	0.21		8	52	41.6	3.18	8.39	.0208418	1	27.5	269	34	29.5		4	42	48.6	.6659194
16	13	6	11.65	0.22		9	26	7.6	3.23	8.51	.0147185	1	27.6	272	22	40.1		4	57	40.4	.6645137
17	13	10	7.40	0.22		9	58	31.6	3.27	8.63	.0083968	1	27.6	275	12	9.8		5	11	55.4	.6628452
18	13	13	55.91	0.22	S.	10	29	49.8	3.32	8.76	0.0018723	1	27.4	278	3	11.7	S.	5	25	31.8	9.66609130
19	13	17	36.63	0.23		10	59	57.8	3.38	8.90	9.9951406	1	27.1	280	55	59.3		5	38	27.1	.6587161
20	13	21	8.97	0.23		11	28	51.0	3.44	9.04	.9881985	1	26.7	283	50	46.3		5	50	39.0	.6562534
21	13	24	32.23	0.23		11	56	23.9	3.49	9.19	.9810434	1	26.1	286	47	46.9		6	2	4.7	.6535241
22	13	27	45.65	0.24		12	22	30.9	3.55	9.35	.9736743	1	25.4	289	47	15.8		6	12	41.1	.6505270
23	13	30	48.37	0.24		12	47	5.6	3.61	9.52	.9660914	1	24.5	292	49	28.1		6	22	25.0	.6472618
24	13	33	39.43	0.25	S.	13	10	1.2	3.68	9.69	9.9582975	1	23.4	295	54	39.7	S.	6	31	12.6	9.6437279
25	13	36	17.76	0.25		13	31	9.6	3.75	9.87	.9502981	1	22.1	299	3	6.7		6	38	59.8	.6399251
26	13	38	42.23	0.26		13	50	22.2	3.82	10.05	.9421016	1	20.6	302	15	6.3		6	45	42.4	.6358539
27	13	40	51.56	0.27		14	7	29.7	3.89	10.25	.9337212	1	18.8	305	30	56.2		6	51	15.3	.6315155
28	13	42	44.39	0.28		14	22	21.3	3.97	10.45	.9251753	1	16.7	308	50	54.7		6	55	33.2	.6269115
29	13	44	19.26	0.28		14	34	45.6	4.05	10.66	.9164885	1	14.3	312	15	20.8		6	58	30.7	.6220452
30	13	45	34.65	0.29	S.	14	44	30.0	4.13	10.88	9.9076930	1	11.6	315	44	34.6	S.	7	0	1.3	9.6169207
Oct. 1	13	46	28.98	0.29		14	51	20.8	4.22	11.11	.8988308	1	8.6	319	18	56.3		6	59	58.2	.6115438
2	13	47	0.67	0.30		14	55	3.5	4.31	11.34	.8899543	1	5.2	322	58	47.1		6	58	14.3	.6059220
3	13	47	8.15	0.30		14	55	22.7	4.40	11.57	.8811288	1	1.4	326	44	28.7		6	54	11.9	.6000655
4	13	46	49.99	0.31	S.	14	52	2.7	4.48	11.80	9.8724343	0	57.1	330	36	23.4	S.	6	49	13.0	9.5939868

## MEAN TIME.

Date.	Apparent Right Ascension.			Sid. Time of Semid. pass Merid.	Apparent Declination.			Semidiameter.	Hor. Par.	Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric Longitude.			Heliocentric Latitude.			Log. of Rad. Vect.	
	Noon.				Noon.							Noon.			Noon.				
	h	m	s	s	°	'	"	"	"		h	m	°	'	"	°	'	"	
Oct.	4	13	46	49.99	0.31	S. 14	52	2.7	4.48	11.80	9.8724343	0 57.1	330 30 23.4	S. 6	49	13.0	9.5939868		
	5	13	46	4.95	0.31		14	44	48.0	4.57	12.04	.8639667	0 52.4	334 34 53.5	6	41	39.2	.5877021	
	6	13	44	52.09	0.32		14	33	23.9	4.65	12.26	.8558403	0 47.2	338 40 21.6	6	31	51.9	.5812309	
	7	13	43	10.94	0.32		14	17	37.8	4.73	12.48	.8481863	0 41.6	342 53 10.0	6	19	42.4	.5745969	
	8	13	41	1.62	0.33		13	57	20.6	4.82	12.69	.8411547	0 35.5	347 13 40.5	6	5	2.3	.5678291	
	9	13	38	25.02	0.33		13	32	28.3	4.89	12.87	.8349095	0 29.0	351 42 13.8	5	47	43.4	.5609619	
	10	13	35	22.94	0.34	S. 13	3	3.9	4.94	13.03	9.8296274	0 22.0	356 19 9.1	S. 5	27	38.6	9.5540356		
	11	13	31	58.20	0.34		12	29	19.7	4.99	13.15	.8254881	0 14.7	1 44 3.2	5	44	2.0	.5470976	
	12	13	28	14.76	0.34		11	51	38.2	5.03	13.24	.8226681	{ 0 7.1 23 59.3 }	5 59 10.0	4	38	49.6	.5402020	
	13	13	24	17.64	0.34		11	10	34.2	5.04	13.28	.8213269	23 51.3	11 2 39.3	4	9	59.6	.5334102	
	14	13	20	12.85	0.34		10	26	54.5	5.04	13.27	.8215962	23 43.3	16 15 16.2	3	38	13.7	.5267912	
	15	13	16	7.15	0.34		9	41	36.7	5.01	13.21	.8235671	23 35.4	21 36 59.4	3	3	37.3	.5204205	
	16	13	12	7.75	0.34	S. 8	55	47.2	4.97	13.10	9.8272800	23 27.7	27 7 40.8	S. 2	26	20.5	9.5143793		
	17	13	8	21.88	0.33		8	10	36.7	4.91	12.93	.8327185	23 20.4	32 47 3.6	1	46	38.5	.5087533	
	18	13	4	56.45	0.33		7	27	17.0	4.83	12.73	.8398089	23 13.5	38 34 42.0	1	4	52.4	.5036303	
19	13	1	57.62	0.32		6	46	55.4	4.73	12.48	.8484226	23 7.1	44 30 0.0	S. 0	21	29.1	.4990973		
20	12	59	30.49	0.31		6	10	31.2	4.63	12.19	.8583863	23 1.3	50 32 11.2	N. 0	22	59.2	.4952378		
21	12	57	38.97	0.30		5	38	52.7	4.51	11.88	.8694949	22 56.1	56 40 18.3	1	7	54.8	.4921274		
22	12	56	25.61	0.29	S. 5	12	35.4	4.38	11.56	9.8815239	22 51.6	62 53 14.0	N. 1	52	36.6	9.4898305			
23	12	55	51.69	0.29		4	52	1.5	4.26	11.23	.8912437	22 47.7	69 9 42.1	2	36	20.9	.4883965		
24	12	55	57.32	0.28		4	37	20.8	4.14	10.89	.9074306	22 44.5	75 28 19.0	3	18	24.1	.4878573		
25	12	56	41.59	0.28		4	28	32.0	4.01	10.56	.9208768	22 41.9	81 47 36.0	3	58	4.0	.4882250		
26	12	58	2.80	0.27		4	25	24.9	3.88	10.23	.9343969	22 39.8	88 6 2.3	4	34	42.6	.4894913		
27	12	59	58.67	0.26		4	27	41.9	3.76	9.92	.9478303	22 38.3	94 22 7.6	5	7	47.3	.4916280		
28	13	2	26.51	0.25	S. 4	35	0.7	3.65	9.63	9.9610434	22 37.3	100 34 25.5	N. 5	36	52.8	9.4945888			
29	13	5	23.47	0.24		4	46	55.8	3.55	9.35	.9739291	22 36.7	106 41 35.4	6	1	41.4	.4983118		
30	13	8	46.58	0.23		5	2	59.7	3.45	9.08	.9864053	22 36.5	112 42 26.0	6	22	3.4	.5027214		
31	13	12	32.97	0.22		5	22	44.7	3.35	8.83	.99984113	22 36.7	118 35 55.8	6	37	56.7	.5077412		
Nov.	1	13	16	39.86	0.22	5	45	43.6	3.26	8.60	0.0099060	22 37.2	124 21 15.0	6	49	25.8	.5132785		
	2	13	21	4.70	0.21		6	11	30.1	3.18	8.39	.0208639	22 37.9	129 57 44.8	6	56	40.9	.5192477	
	3	13	25	45.16	0.21	S. 6	39	39.8	3.11	8.19	0.0312733	22 38.9	135 24 58.4	N. 6	59	56.7	9.5255624		
	4	13	30	39.12	0.20		7	9	49.9	3.04	8.00	.0411320	22 40.0	140 42 39.0	6	59	30.7	.5321403	
	5	13	35	44.73	0.20		7	41	39.7	2.97	7.83	.0504464	22 41.3	145 50 39.7	6	55	42.3	.5389047	
	6	13	41	0.38	0.20		8	14	50.5	2.91	7.67	.0592284	22 42.7	150 49 1.6	6	48	52.0	.5457855	
	7	13	46	24.63	0.19		8	49	5.4	2.86	7.53	.0674943	22 44.3	155 37 52.7	6	39	20.2	.5527197	
	8	13	51	56.29	0.19		9	24	9.7	2.81	7.40	.0752631	22 46.0	160 17 26.7	6	27	26.7	.5596520	
	9	13	57	34.33	0.19	S. 9	59	49.9	2.76	7.28	0.0825557	22 47.8	164 48 1.5	N. 6	13	30.4	9.5665336		
	10	14	3	17.88	0.18		10	35	54.4	2.72	7.17	.0893935	22 49.6	169 9 58.1	5	57	48.7	.5733230	
	11	14	9	6.21	0.18		11	12	12.9	2.68	7.06	.0957986	22 51.5	173 23 39.9	5	40	37.7	.5799847	
	12	14	14	58.71	0.18		11	48	36.1	2.64	6.96	.1017923	22 53.5	177 29 31.9	5	22	12.0	.5864887	
	13	14	20	54.88	0.18		12	24	56.2	2.61	6.87	.1073957	22 55.6	181 27 59.6	5	2	44.4	.5928103	
	14	14	26	54.30	0.18		13	1	6.1	2.57	6.79	.1126289	22 57.7	185 19 29.0	4	42	26.6	.5989291	
	15	14	32	56.64	0.17	S. 13	36	59.6	2.54	6.71	0.1175112	22 59.8	189 4 25.8	N. 4	21	28.8	9.6048288		
16	14	39	1.61	0.17		14	12	31.1	2.51	6.64	.1220602	23 0.0	192 43 15.4	3	59	59.7	.6104959		
17	14	45	9.01	0.17		14	47	35.9	2.49	6.58	.1262934	23 4.2	196 16 22.7	3	38	7.2	.6159199		
18	14	51	18.66	0.17		15	22	9.6	2.47	6.52	.1302262	23 6.5	199 44 11.5	3	15	57.9	.6210925		
19	14	57	30.43	0.17	S. 15	56	8.3	2.46	6.47	0.1338735	23 8.8	203 7 4.9	N. 2	53	37.8	9.6260081			

## MEAN TIME.

Date.	Apparent Right Ascension.			Sid. Time of Semid. pass- Merid.	Apparent Declination.			Semidiameter.	Hor. Par.	Log. of True Dist. from the Earth.	Meridian Passage.	Heliocentric Longitude.	Heliocentric Latitude.	Log. of Rad. Vect.		
	Noon.				Noon.											
	h	m	s	s	°	'	"	"	"		h	m	°	'	"	
Nov. 19	14	57	30.43	0.17	S. 15	56	8.3	2.46	6.47	0.1338735	23 8.8	203 7 4.9	N. 2	53	37.8	9.6260081
20	15	3	44.20	0.17	16	29	28.5	2.44	6.42	.1372487	23 11.1	206 25 25.2	2	31	1.9	.6306620
21	15	9	59.92	0.17	17	2	7.3	2.42	6.37	.1403645	23 13.5	209 39 33.5	2	8	44.5	.6350509
22	15	16	17.52	0.17	17	34	1.6	2.40	6.33	.1432322	23 15.9	212 49 50.1	1	46	19.3	.6391728
23	15	22	36.96	0.17	18	5	8.9	2.39	6.29	.1458625	23 18.3	215 56 34.4	1	23	59.5	.6430265
24	15	28	58.24	0.17	18	35	27.0	2.37	6.25	.1482650	23 20.7	219 0 5.0	1	1	48.1	.6466115
25	15	35	21.32	0.17	N. 19	4	53.5	2.36	6.22	0.1504183	23 23.2	222 0 39.5	N. 0	39	47.2	9.6499278
26	15	41	46.22	0.17	19	33	26.3	2.35	6.19	.1524204	23 25.7	224 58 34.8	N. 0	17	59.2	.6529755
27	15	48	12.92	0.17	20	1	3.7	2.34	6.17	.1541881	23 28.2	227 54 7.0	S. 0	3	34.3	.6557555
28	15	54	41.46	0.17	20	27	43.8	2.33	6.15	.1557578	23 30.8	230 47 31.8	0	24	51.5	.6582687
29	16	1	11.82	0.17	20	53	24.8	2.33	6.13	.1571353	23 33.4	233 39 4.1	0	45	51.1	.6605160
30	16	7	44.03	0.17	21	18	5.1	2.32	6.11	.1583254	23 36.0	236 28 58.3	1	6	31.8	.6624983
Dec. 1	16	14	18.08	0.17	S. 21	41	43.1	2.32	6.10	0.1593324	23 38.7	239 17 28.3	S. 1	26	52.3	9.6642168
2	16	20	54.00	0.17	22	4	17.1	2.32	6.00	.1601596	23 41.4	242 4 47.7	1	46	51.6	.6656723
3	16	27	31.77	0.17	22	25	45.8	2.31	6.08	.1608104	23 44.1	244 51 9.5	2	6	28.5	.6668657
4	16	34	11.40	0.17	22	46	7.6	2.31	6.07	.1612872	23 46.8	247 36 46.8	2	25	42.1	.6677975
5	16	40	52.89	0.17	23	5	20.9	2.31	6.07	.1615917	23 49.6	250 21 52.2	2	44	31.2	.6684687
6	16	47	36.22	0.17	23	23	24.5	2.30	6.06	.1617252	23 52.5	253 6 38.0	3	2	54.9	.6688794
7	16	54	21.37	0.17	S. 23	40	16.8	2.30	6.06	0.1616888	23 55.3	255 51 16.5	S. 3	20	52.1	9.6690301
8	17	1	8.31	0.17	23	55	56.4	2.31	6.07	.1614827	23 58.2	258 36 0.1	3	38	21.5	.6689209
9	17	7	57.02	0.17	24	10	21.9	2.31	6.07	.1611062	*	261 21 0.9	3	55	22.1	.6685517
10	17	14	47.44	0.17	24	23	32.0	2.31	6.08	.1605588	0 1.1	264 6 31.2	4	11	52.4	.6679220
11	17	21	39.52	0.17	24	35	25.3	2.32	6.09	.1598388	0 4.0	266 52 43.1	4	27	51.1	.6670318
12	17	28	33.18	0.17	24	46	0.2	2.32	6.10	.1589447	0 6.9	269 39 49.2	4	43	16.6	.6658801
13	17	35	28.36	0.17	S. 24	55	15.7	2.33	6.12	0.1578734	0 9.0	272 28 2.1	S. 4	58	7.3	9.6644665
14	17	42	24.96	0.17	25	3	10.2	2.33	6.14	.1566221	0 12.9	275 17 34.4	5	12	21.2	.6627901
15	17	49	22.87	0.17	25	9	42.4	2.34	6.16	.1551872	0 16.0	278 8 39.4	5	25	56.3	.6608500
16	17	56	21.97	0.17	25	14	51.1	2.34	6.18	.1535643	0 19.0	281 1 30.5	5	38	50.3	.6586449
17	18	3	22.13	0.17	25	18	35.1	2.35	6.20	.1517485	0 22.1	283 56 21.4	5	51	0.9	.6561741
18	18	10	23.18	0.17	25	20	53.0	2.36	6.23	.1497342	0 25.2	286 53 26.3	6	2	25.1	.6534367
19	18	17	24.95	0.17	S. 25	21	43.8	2.37	6.26	0.1475152	0 28.3	289 53 0.0	S. 6	12	59.9	9.6504318
20	18	24	27.25	0.18	25	21	6.2	2.39	6.30	.1450845	0 31.4	292 55 17.5	6	22	42.1	.6471583
21	18	31	29.87	0.18	25	18	59.4	2.41	6.34	.1424345	0 34.5	296 0 34.8	6	31	27.9	.6436162
22	18	38	32.57	0.18	25	15	22.2	2.42	6.38	.1395563	0 37.6	299 9 8.1	6	39	13.2	.6398053
23	18	45	35.08	0.18	25	10	13.8	2.44	6.43	.1364408	0 40.7	302 21 14.4	6	45	53.7	.6357261
24	18	52	37.11	0.18	25	3	33.6	2.46	6.48	.1330774	0 43.8	305 37 11.6	6	51	24.4	.6313795
25	18	59	38.35	0.18	S. 24	55	20.8	2.48	6.53	0.1294550	0 46.9	308 57 18.0	S. 6	55	40.0	9.6267676
26	19	6	38.42	0.18	24	45	35.1	2.50	6.59	.1255611	0 50.0	312 21 52.6	6	58	34.9	.6218935
27	19	13	36.92	0.18	24	34	16.3	2.52	6.65	.1213826	0 53.0	315 51 15.3	7	0	2.6	.6167612
28	19	20	33.40	0.18	24	21	24.3	2.55	6.72	.1169046	0 56.0	319 25 46.7	6	59	56.5	.6113768
29	19	27	27.37	0.19	24	6	59.5	2.58	6.80	.1121119	0 58.9	323 5 47.8	6	58	9.4	.6057478
30	19	34	18.25	0.19	23	51	2.5	2.61	6.88	.1069875	1 1.8	326 51 40.4	6	54	33.6	.5998845
31	19	41	5.40	0.19	S. 23	33	34.3	2.64	6.96	0.1015138	1 4.7	330 43 46.8	S. 6	49	1.0	9.5937994
32	19	47	48.12	0.19	S. 23	14	36.5	2.68	7.06	0.0956717	1 7.5	334 12 29.2	S. 6	41	23.3	9.5875088

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.		
	h m s	° ' "		h m		h m s	° ' "		h m		
Jan. 1	18 4 27.08	S. 23 30 17.1	0.2251080	23 24.5	Feb. 16	22 5 44.31	S. 13 12 9.6	0.2340891	0 23.0		
2	18 9 56.41	23 31 46.5	.2255331	23 26.1	17	22 10 33.83	12 46 17.5	.2340455	0 23.9		
3	18 15 25.82	23 32 32.2	.2259475	23 27.6	18	22 15 22.28	12 20 4.9	.2339913	0 24.7		
4	18 20 55.25	23 32 34.2	.2263512	23 29.2	19	22 20 9.69	11 53 32.4	.2339266	0 25.6		
5	18 26 24.63	23 31 52.4	.2267443	23 30.7	20	22 24 56.08	11 26 40.8	.2338512	0 26.4		
6	18 31 53.91	23 30 26.9	.2271269	23 32.3	21	22 29 41.48	10 59 30.9	.2337650	0 27.2		
7	18 37 23.01	23 28 17.6	.2274992	23 33.8	22	22 34 25.92	10 32 3.5	.2336678	0 28.0		
8	18 42 51.88	23 25 24.6	.2278612	23 35.3	23	22 39 9.42	10 4 19.3	.2335596	0 28.8		
9	18 48 20.46	23 21 48.1	.2282129	23 36.9	24	22 43 52.02	9 36 19.2	.2334403	0 29.6		
10	18 53 48.69	23 17 28.2	.2285545	23 38.4	25	22 48 33.75	9 8 3.8	.2333098	0 30.3		
11	18 59 16.51	23 12 25.1	.2288861	23 39.9	26	22 53 14.63	8 39 33.9	.2331680	0 31.1		
12	19 4 43.85	23 6 39.0	.2292078	23 41.4	27	22 57 54.71	8 10 50.4	.2330148	0 31.8		
13	19 10 10.67	23 0 10.1	.2295196	23 42.9	28	23 2 34.01	7 41 53.9	.2328503	0 32.5		
14	19 15 36.92	22 52 58.7	.2298216	23 44.4	Mar. 1	23 7 12.58	7 12 45.3	.2326742	0 33.2		
15	19 21 2.54	22 45 5.0	.2301138	23 45.9	2	23 11 50.44	6 43 25.4	.2324867	0 33.9		
16	19 26 27.48	22 36 29.5	.2303961	23 47.4	3	23 16 27.63	6 13 54.8	.2322876	0 34.6		
17	19 31 51.70	22 27 12.5	.2306685	23 48.8	4	23 21 4.19	5 44 14.4	.2320769	0 35.2		
18	19 37 15.15	22 17 14.3	.2309310	23 50.2	5	23 25 40.16	5 14 24.9	.2318546	0 35.9		
19	19 42 37.78	22 6 35.4	.2311834	23 51.7	6	23 30 15.57	4 44 27.0	.2316206	0 36.5		
20	19 47 59.55	21 55 16.2	.2314257	23 53.1	7	23 34 50.47	4 14 21.5	.2313749	0 37.2		
21	19 53 20.41	21 43 17.2	.2316578	23 54.5	8	23 39 24.90	3 44 9.2	.2311175	0 37.8		
22	19 58 40.33	21 30 38.8	.2318797	23 55.8	9	23 43 58.90	3 13 50.7	.2308484	0 38.4		
23	20 3 59.27	21 17 21.6	.2320914	23 57.2	10	23 48 32.51	2 43 26.9	.2305677	0 39.1		
24	20 9 17.19	21 3 26.2	.2322927	23 58.5	11	23 53 5.76	2 12 58.4	.2302754	0 39.7		
25	20 14 34.05	20 48 53.2	.2324837	23 59.8	12	23 57 38.71	1 42 25.9	.2299714	0 40.3		
26	20 19 49.83	20 33 43.0	.2326643	* *	13	0 2 11.40	1 11 50.3	.2296556	0 40.9		
27	20 25 4.50	20 17 56.4	.2328346	0 1.2	14	0 6 43.87	0 41 12.2	.2293280	0 41.5		
28	20 30 18.03	20 1 33.9	.2329945	0 2.4	15	0 11 16.18	S. 0 10 32.3	.2289886	0 42.1		
29	20 35 30.40	19 44 36.2	.2331440	0 3.7	16	0 15 48.36	N. 0 20 8.5	.2286372	0 42.7		
30	20 40 41.59	19 27 3.9	.2332832	0 5.0	17	0 20 20.46	0 50 49.7	.2282736	0 43.3		
31	20 45 51.57	19 8 57.6	.2334120	0 6.2	18	0 24 52.52	1 21 30.5	.2278977	0 43.9		
Feb. 1	20 51 0.34	18 50 18.2	.2335304	0 7.4	19	0 29 24.60	1 52 10.2	.2275095	0 44.4		
2	20 56 7.87	18 31 6.2	.2336385	0 8.6	20	0 33 56.73	2 22 48.0	.2271086	0 45.0		
3	21 1 14.18	18 11 22.4	.2337363	0 9.7	21	0 38 28.95	2 53 23.2	.2266950	0 45.6		
4	21 6 19.24	17 51 7.5	.2338239	0 10.9	22	0 43 1.31	3 23 55.1	.2262685	0 46.2		
5	21 11 23.05	17 30 22.2	.2339013	0 12.0	23	0 47 33.85	3 54 22.9	.2258289	0 46.8		
6	21 16 25.61	17 9 7.2	.2339686	0 13.1	24	0 52 6.62	4 24 45.9	.2253760	0 47.4		
7	21 21 26.92	16 47 23.3	.2340257	0 14.2	25	0 56 39.64	4 55 3.4	.2249097	0 48.0		
8	21 26 27.00	16 25 11.3	.2340728	0 15.2	26	1 1 12.97	5 25 14.6	.2244299	0 48.7		
9	21 31 25.84	16 2 31.8	.2341099	0 16.3	27	1 5 46.63	5 55 18.8	.2239365	0 49.3		
10	21 36 23.46	15 39 25.5	.2341370	0 17.3	28	1 10 20.68	6 25 15.2	.2234293	0 49.9		
11	21 41 19.87	15 15 53.3	.2341542	0 18.3	29	1 14 55.14	6 55 3.1	.2229083	0 50.5		
12	21 46 15.08	14 51 56.0	.2341613	0 19.3	30	1 19 30.06	7 24 41.7	.2223732	0 51.2		
13	21 51 9.11	14 27 34.1	.2341585	0 20.2	31	1 24 5.48	7 54 10.4	.2218239	0 51.8		
14	21 56 1.97	14 2 48.6	.2341455	0 21.2	Apr. 1	1 28 41.42	8 23 28.3	.2212604	0 52.5		
15	22 0 53.70	13 37 40.2	.2341224	0 22.1	2	1 33 17.93	8 52 34.7	.2206825	0 53.1		
16	22 5 44.31	S. 13 12 9.6	0.2340891	0 23.0	3	1 37 55.03	N. 9 21 28.8	0.2200903	0 53.8		
	H. P.	S. D.		H. P.	S. D.		H. P.	S. D.		H. P.	S. D.
Jan. 1	5.24	5.01	Jan. 25	5.15	4.92	Feb. 18	5.13	4.90	Mar. 14	5.19	4.96
5	5.22	4.99	29	5.14	4.91	22	5.14	4.91	18	5.21	4.98
9	5.20	4.97	Feb. 2	5.14	4.91	26	5.14	4.91	22	5.23	5.00
13	5.19	4.96	6	5.13	4.90	Mar. 2	5.15	4.92	26	5.25	5.02
17	5.17	4.94	10	5.13	4.90	6	5.16	4.93	30	5.27	5.04
21	5.16	4.93	14	5.13	4.90	10	5.17	4.94	Apr. 3	5.30	5.07



Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Apr. 3	1 37 55.03	N. 9 21 28.8	0.2200903	0 53.8	May 19	5 26 56.90	N. 24 20 5.8	0.1756383	1 41.5
4	1 42 32.77	9 50 10.0	.2194835	0 54.5	20	5 32 15.55	24 26 8.5	.1742549	1 42.9
5	1 47 11.18	10 18 37.4	.2188623	0 55.2	21	5 37 34.53	24 31 28.9	.1728519	1 44.3
6	1 51 50.28	10 46 50.3	.2182265	0 55.9	22	5 42 53.78	24 36 6.8	.1714291	1 45.7
7	1 56 30.12	11 14 48.0	.2175762	0 56.6	23	5 48 13.24	24 40 1.9	.1699863	1 47.1
8	2 1 10.72	11 42 29.7	.2169113	0 57.4	24	5 53 32.85	24 43 14.2	.1685233	1 48.5
9	2 5 52.12	12 9 54.7	.2162317	0 58.1	25	5 58 52.54	24 45 43.5	.1670400	1 49.8
10	2 10 34.35	12 37 2.2	.2155375	0 58.9	26	6 4 12.25	24 47 29.8	.1655362	1 51.2
11	2 15 17.44	13 3 51.5	.2148286	0 59.7	27	6 9 31.91	24 48 32.9	.1640117	1 52.6
12	2 20 1.42	13 30 21.8	.2141049	1 0.4	28	6 14 51.45	24 48 52.9	.1624663	1 54.0
13	2 24 46.31	13 56 32.5	.2133664	1 1.2	29	6 20 10.82	24 48 29.7	.1609000	1 55.4
14	2 29 32.15	14 22 22.7	.2126128	1 2.1	30	6 25 29.94	24 47 23.4	.1593125	1 56.8
15	2 34 18.97	14 47 51.6	.2118441	1 2.9	31	6 30 48.74	24 45 34.1	.1577038	1 58.1
16	2 39 6.78	15 12 58.7	.2110601	1 3.8	June 1	6 36 7.16	24 43 1.8	.1560738	1 59.5
17	2 43 55.60	15 37 43.1	.2102606	1 4.6	2	6 41 25.14	24 39 46.7	.1544224	2 0.9
18	2 48 45.46	16 2 4.0	.2094455	1 5.5	3	6 46 42.60	24 35 49.0	.1527497	2 2.2
19	2 53 36.37	16 26 0.8	.2086136	1 6.4	4	6 51 59.49	24 31 9.0	.1510556	2 3.5
20	2 58 28.35	16 49 32.7	.2077676	1 7.4	5	6 57 15.74	24 25 46.7	.1493400	2 4.9
21	3 3 21.40	17 12 39.0	.2069045	1 8.3	6	7 2 51.30	24 19 42.4	.1476029	2 6.2
22	3 8 15.55	17 35 19.0	.2060250	1 9.3	7	7 7 46.11	24 12 56.4	.1458443	2 7.5
23	3 13 10.80	17 57 31.8	.2051290	1 10.3	8	7 13 0.11	24 5 29.1	.1440643	2 8.8
24	3 18 7.15	18 19 16.8	.2042163	1 11.3	9	7 18 13.25	23 57 20.8	.1422626	2 10.1
25	3 23 4.60	18 40 33.2	.2032867	1 12.3	10	7 23 25.48	23 48 31.9	.1404394	2 11.3
26	3 28 3.16	19 1 20.4	.2023401	1 13.3	11	7 28 36.76	23 39 2.7	.1385945	2 12.6
27	3 33 2.82	19 21 37.5	.2013764	1 14.3	12	7 33 47.03	23 28 53.6	.1367279	2 13.8
28	3 38 3.58	19 41 24.0	.2003952	1 15.4	13	7 38 56.26	23 18 5.1	.1348393	2 15.0
29	3 43 5.43	20 0 39.1	.1993966	1 16.5	14	7 44 4.41	23 6 37.7	.1329288	2 16.2
30	3 48 8.35	20 19 22.1	.1983803	1 17.6	15	7 49 11.43	22 54 31.8	.1309960	2 17.4
May 1	3 53 12.33	20 37 32.4	.1973464	1 18.8	16	7 54 17.29	22 41 48.0	.1290409	2 18.5
2	3 58 17.36	20 55 9.3	.1962947	1 19.9	17	7 59 21.95	22 28 26.7	.1270632	2 19.6
3	4 3 23.42	21 12 12.1	.1952251	1 21.0	18	8 4 25.38	22 14 28.6	.1250628	2 20.8
4	4 8 30.49	21 28 40.2	.1941375	1 22.2	19	8 9 27.54	21 59 54.1	.1230396	2 21.9
5	4 13 38.54	21 44 33.0	.1930320	1 23.4	20	8 14 28.41	21 44 43.8	.1209933	2 22.9
6	4 18 47.55	21 59 50.0	.1919084	1 24.6	21	8 19 27.97	21 28 58.4	.1189237	2 24.0
7	4 23 57.50	22 14 30.5	.1907668	1 25.9	22	8 24 26.18	21 12 38.5	.1168307	2 25.0
8	4 29 8.35	22 28 33.9	.1896072	1 27.1	23	8 29 23.03	20 55 44.6	.1147139	2 26.0
9	4 34 20.07	22 41 59.7	.1884294	1 28.3	24	8 34 18.49	20 38 17.5	.1125732	2 27.0
10	4 39 32.63	22 54 47.4	.1872335	1 29.6	25	8 39 12.55	20 20 17.7	.1104084	2 27.9
11	4 44 46.00	23 6 56.5	.1860193	1 30.9	26	8 44 5.19	20 1 46.0	.1082193	2 28.9
12	4 50 0.13	23 18 26.5	.1847869	1 32.2	27	8 48 56.38	19 42 43.0	.1060056	2 29.8
13	4 55 14.98	23 29 16.9	.1835362	1 33.5	28	8 53 46.12	19 23 9.5	.1037671	2 30.7
14	5 0 30.52	23 39 27.3	.1822670	1 34.8	29	8 58 34.40	19 3 6.0	.1015039	2 31.5
15	5 5 46.70	23 48 57.3	.1809791	1 36.1	30	9 3 21.21	18 42 33.4	.0992156	2 32.4
16	5 11 3.48	23 57 46.5	.1796725	1 37.5	July 1	9 8 6.54	18 21 32.2	.0969022	2 33.2
17	5 16 20.81	24 5 54.5	.1783470	1 38.8	2	9 12 50.38	18 0 3.2	.0945637	2 34.0
18	5 21 38.63	24 13 21.1	.1770023	1 40.2	3	9 17 32.74	17 38 7.2	.0921999	2 34.7
19	5 26 56.90	N. 24 20 5.8	0.1756383	1 41.5	4	9 22 13.62	N. 17 15 44.8	0.0898109	2 35.5

	H. P.	S. D.		H. P.	S. D.		H. P.	S. D.		H. P.	S. D.
Apr. 3	5.30	5.07	Apr. 27	5.53	5.29	May 21	5.91	5.65	June 14	6.48	6.19
7	5.33	5.09	May 1	5.59	5.34	25	5.99	5.72	18	6.60	6.31
11	5.37	5.13	5	5.64	5.39	29	6.08	5.81	22	6.72	6.42
15	5.40	5.16	9	5.70	5.45	June 2	6.17	5.90	26	6.86	6.56
19	5.44	5.20	13	5.77	5.51	6	6.26	5.98	30	7.00	6.69
23	5.49	5.25	17	5.84	5.58	10	6.37	6.09	July 4	7.15	6.83

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.		
	h m s	° ' "		h m		h m s	° ' "		h m		
July 4	9 22 13.62	N. 17 15 44.8	0.0898109	2 35.5	Aug. 19	12 36 9.82	S. 4 27 57.2	9.9494133	2 47.9		
5	9 26 53.02	16 52 56.8	0.0873965	2 36.2	20	12 40 4.02	4 58 5.8	9.9455983	2 47.9		
6	9 31 30.94	16 29 43.9	0.0849568	2 36.9	21	12 43 57.80	5 28 9.0	9.9417450	2 47.9		
7	9 36 7.39	16 6 6.7	0.0824917	2 37.5	22	12 47 51.20	5 58 6.1	9.9378527	2 47.8		
8	9 40 42.39	15 42 6.1	0.0800011	2 38.2	23	12 51 44.21	6 27 56.7	9.9339207	2 47.8		
9	9 45 15.95	15 17 42.6	0.0774849	2 38.9	24	12 55 36.85	6 57 40.0	9.9299485	2 47.7		
10	9 49 48.09	14 52 57.1	0.0749431	2 39.4	25	12 59 29.12	7 27 15.5	9.9259354	2 47.6		
11	9 54 18.82	14 27 50.1	0.0723754	2 39.9	26	13 3 21.03	7 56 42.5	9.9218806	2 47.5		
12	9 58 48.16	14 2 22.4	0.0697817	2 40.5	27	13 7 12.58	8 26 0.5	9.9177839	2 47.5		
13	10 3 16.13	13 36 34.7	0.0671618	2 41.0	28	13 11 3.76	8 55 8.8	9.9136446	2 47.4		
14	10 7 42.76	13 10 27.7	0.0645156	2 41.5	29	13 14 54.59	9 24 6.7	9.9094624	2 47.3		
15	10 12 8.06	12 44 2.1	0.0618429	2 42.0	30	13 18 45.05	9 52 53.7	9.9052368	2 47.2		
16	10 16 32.05	12 17 18.7	0.0591433	2 42.4	31	13 22 35.15	10 21 29.2	9.9009673	2 47.1		
17	10 20 54.76	11 50 18.1	0.0564167	2 42.9	Sept. 1	13 26 24.88	10 49 52.5	8.9665355	2 46.9		
18	10 25 16.22	11 23 0.9	0.0536629	2 43.3	2	13 30 14.24	11 18 3.1	8.922950	2 46.8		
19	10 29 36.45	10 55 28.0	0.0508815	2 43.6	3	13 34 3.22	11 46 0.4	8.878914	2 46.7		
20	10 33 55.47	10 27 39.9	0.0480723	2 44.0	4	13 37 51.82	12 13 43.9	8.834421	2 46.6		
21	10 38 13.31	9 59 37.4	0.0452350	2 44.4	5	13 41 40.02	12 41 12.9	8.789467	2 46.4		
22	10 42 30.00	9 31 21.1	0.0423691	2 44.7	6	13 45 27.81	13 8 26.8	8.744046	2 46.3		
23	10 46 45.57	9 2 51.7	0.0394744	2 45.0	7	13 49 15.18	13 35 25.1	8.698154	2 46.1		
24	10 51 0.03	8 34 10.0	0.0365505	2 45.2	8	13 53 2.12	14 2 7.2	8.651785	2 46.0		
25	10 55 13.41	8 5 16.6	0.0335970	2 45.6	9	13 56 48.61	14 28 32.6	8.604934	2 45.8		
26	10 59 25.73	7 36 12.2	0.0306136	2 45.9	10	14 0 34.62	14 54 40.7	8.557594	2 45.6		
27	11 3 37.02	7 6 57.5	0.0276000	2 46.1	11	14 4 20.14	15 20 31.0	8.509760	2 45.4		
28	11 7 47.30	6 37 33.2	0.0245560	2 46.3	12	14 8 5.13	15 46 2.9	8.461425	2 45.2		
29	11 11 56.59	6 7 59.9	0.0214811	2 46.5	13	14 11 49.57	16 11 15.9	8.412583	2 45.0		
30	11 16 4.92	5 38 18.4	0.0183752	2 46.7	14	14 15 33.43	16 36 9.4	8.363227	2 44.8		
31	11 20 12.31	5 8 29.3	0.0152382	2 46.9	15	14 19 16.67	17 0 43.0	8.313350	2 44.6		
Aug. 1	11 24 18.79	4 38 33.3	0.0120698	2 47.1	16	14 22 59.25	17 24 56.0	8.262943	2 44.4		
2	11 28 24.38	4 8 31.0	0.0088698	2 47.2	17	14 26 41.13	17 48 48.0	8.211998	2 44.1		
3	11 32 29.10	3 38 23.1	0.0056382	2 47.4	18	14 30 22.25	18 12 18.5	8.160505	2 43.9		
4	11 36 32.99	3 8 10.2	0.0023746	2 47.5	19	14 34 2.56	18 35 26.9	8.108456	2 43.6		
5	11 40 36.07	2 37 52.9	9.9990789	2 47.6	20	14 37 42.00	18 58 12.8	8.055842	2 43.3		
6	11 44 38.37	2 7 31.9	9.9957510	2 47.7	21	14 41 20.49	19 20 35.6	8.002653	2 43.0		
7	11 48 39.92	1 37 7.9	9.9923905	2 47.8	22	14 44 57.95	19 42 34.9	7.948882	2 42.7		
8	11 52 40.75	1 6 41.4	9.9889973	2 47.8	23	14 48 34.31	20 4 10.1	7.894518	2 42.3		
9	11 56 40.88	0 36 13.1	9.9855711	2 47.9	24	14 52 9.48	20 25 20.7	7.839555	2 42.0		
10	12 0 40.35	N. 0 5 43.6	9.9821114	2 47.9	25	14 55 43.35	20 46 6.2	7.7783987	2 41.6		
11	12 4 39.17	S. 0 24 46.6	9.9786180	2 48.0	26	14 59 15.82	21 6 26.2	7.727806	2 41.2		
12	12 8 37.38	0 55 16.8	9.9750907	2 48.0	27	15 2 46.78	21 26 20.1	7.671008	2 40.8		
13	12 12 35.00	1 25 46.3	9.9715290	2 48.0	28	15 6 16.12	21 45 47.4	7.613588	2 40.3		
14	12 16 32.06	1 56 14.6	9.9679326	2 48.0	29	15 9 43.72	22 4 47.6	7.555543	2 39.8		
15	12 20 28.59	2 26 41.1	9.9643011	2 48.0	30	15 13 9.46	22 23 20.4	7.496870	2 39.3		
16	12 24 24.60	2 57 5.2	9.9606339	2 48.0	Oct. 1	15 16 33.21	22 41 25.2	7.437568	2 38.7		
17	12 28 20.13	3 27 26.3	9.9569305	2 48.0	2	15 19 54.83	22 59 1.7	7.377636	2 38.2		
18	12 32 15.20	3 57 43.8	9.9531905	2 48.0	3	15 23 14.18	23 16 9.3	7.317071	2 37.5		
19	12 36 9.82	S. 4 27 57.2	9.9494133	2 47.9	4	15 26 31.11	S. 23 32 47.7	9.7255874	2 36.9		
	H. P.	S. D.		H. P.	S. D.		H. P.	S. D.		H. P.	S. D.
July 4	7.15	6.83	July 28	8.32	7.95	Aug. 21	10.06	9.61	Sept. 14	12.83	12.26
8	7.32	7.00	Aug. 1	8.56	8.18	25	10.44	9.98	18	13.44	12.84
12	7.49	7.16	5	8.82	8.43	29	10.84	10.36	22	14.11	13.48
16	7.68	7.34	9	9.10	8.70	Sept. 2	11.28	10.78	26	14.85	14.14
20	7.88	7.53	13	9.40	8.98	6	11.75	11.23	30	15.66	14.97
24	8.09	7.73	17	9.72	9.29	10	12.27	11.73	Oct. 4	16.55	15.82

# VENUS, 1922.

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Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Oct. 4	15 26 31.11	S. 23 32 47.7	9.7255874	2 36.9	Nov. 19	16 11 46.35	S. 24 42 57.6	9.4334418	0 20.8
5	15 29 45 47	23 48 56.4	.7194048	2 36.2	20	16 9 34.83	24 24 15.3	.4307865	0 14.7
6	15 32 57.10	24 4 35.0	.7131592	2 35.4	21	16 7 19.30	24 4 43.6	.4285748	0 8.5
7	15 36 5.82	24 19 43.2	.7068509	2 34.6	22	16 5 0.73	23 44 27.2	.4268213	{ 0 2.3 } { 23 56.8 }
8	15 39 11.46	24 34 20.4	.7004802	2 33.7	23	16 2 40.10	23 23 31.2	.4255379	23 49.7
9	15 42 13.85	24 48 26.3	.6940477	2 32.8	24	16 0 18.40	23 2 1.0	.4247337	23 43.4
10	15 45 12.80	25 2 0.6	.6875539	2 31.9	25	15 57 56.69	22 40 2.9	.4244150	23 37.2
11	15 48 8.10	25 15 2.7	.6809996	2 30.9	26	15 55 36.00	22 17 43.4	.4245848	23 30.9
12	15 50 59.55	25 27 32.4	.6743858	2 29.8	27	15 53 17.34	21 55 9.7	.4252423	23 24.8
13	15 53 46.95	25 39 29.2	.6677136	2 28.6	28	15 51 1.69	21 32 29.1	.4263829	23 18.7
14	15 56 30.06	25 50 52.7	.6609839	2 27.4	29	15 48 49.99	21 9 49.0	.4280002	23 12.6
15	15 59 8.67	26 1 42.6	.6541982	2 26.1	30	15 46 43.13	20 47 16.5	.4300845	23 6.7
16	16 1 42.52	26 11 58.4	.6473580	2 24.7	Dec. 1	15 44 41.95	20 24 59.0	.4326219	23 0.8
17	16 4 11.38	26 21 39.7	.6404652	2 23.2	2	15 42 47.21	20 3 3.6	.4355960	22 55.2
18	16 6 34.98	26 30 45.9	.6335219	2 21.7	3	15 40 59.59	19 41 36.8	.4389887	22 49.5
19	16 8 53.05	26 39 16.6	.6265306	2 20.0	4	15 39 19.68	19 20 44.7	.4427799	22 44.1
20	16 11 5.30	26 47 11.1	.6194941	2 18.3	5	15 37 48.01	19 0 33.4	.4469487	22 38.8
21	16 13 11.45	26 54 29.0	.6124159	2 16.4	6	15 36 25.04	18 41 8.2	.4514726	22 33.6
22	16 15 11.20	27 1 9.6	.6052998	2 14.5	7	15 35 11.13	18 22 33.5	.4563270	22 28.6
23	16 17 4.23	27 7 12.1	.5981504	2 12.4	8	15 34 6.55	18 4 53.0	.4614864	22 23.7
24	16 18 50.22	27 12 35.8	.5909732	2 10.2	9	15 33 11.52	17 48 10.1	.4669264	22 19.0
25	16 20 28.84	27 17 19.8	.5837742	2 7.9	10	15 32 26.18	17 32 27.8	.4726224	22 14.5
26	16 21 59.79	27 21 23.3	.5765600	2 5.5	11	15 31 50.60	17 17 48.0	.4785502	22 10.1
27	16 23 22.77	27 24 45.4	.5693379	2 2.9	12	15 31 24.80	17 4 12.0	.4846862	22 5.9
28	16 24 37.45	27 27 24.8	.5621171	2 0.2	13	15 31 8.75	16 51 40.8	.4910081	22 1.9
29	16 25 43.51	27 29 20.4	.5549075	1 57.4	14	15 31 2.38	16 40 14.8	.4974942	21 58.0
30	16 26 40.67	27 30 31.0	.5477189	1 54.4	15	15 31 5.57	16 29 54.0	.5041235	21 54.3
31	16 27 28.69	27 30 55.4	.5405623	1 51.2	16	15 31 18.14	16 20 37.8	.5108759	21 50.7
Nov. 1	16 28 7.28	27 30 32.3	.5334504	1 47.9	17	15 31 39.92	16 12 25.5	.5177340	21 47.2
2	16 28 36.18	27 29 20.1	.5263971	1 44.4	18	15 32 10.75	16 5 16.0	.5246815	21 43.9
3	16 28 55.20	27 27 17.5	.5194171	1 40.8	19	15 32 50.40	15 59 7.9	.5317030	21 40.8
4	16 29 4.16	27 24 22.9	.5125261	1 37.0	20	15 33 38.65	15 53 59.5	.5387841	21 37.8
5	16 29 2.93	27 20 34.7	.5057409	1 33.0	21	15 34 35.27	15 49 48.9	.5459117	21 34.9
6	16 28 51.38	27 15 51.2	.4990794	1 28.9	22	15 35 40.04	15 46 34.3	.5530737	21 32.2
7	16 28 29.48	27 10 11.0	.4925610	1 24.6	23	15 36 52.74	15 44 13.6	.5602590	21 29.6
8	16 27 57.22	27 3 32.7	.4862059	1 20.1	24	15 38 13.14	15 42 44.6	.5674576	21 27.1
9	16 27 14.67	26 55 55.0	.4800351	1 15.5	25	15 39 41.01	15 42 5.1	.5746605	21 24.7
10	16 26 21.95	26 47 16.5	.4740702	1 10.7	26	15 41 16.12	15 42 12.9	.5818593	21 22.5
11	16 25 19.26	26 37 36.2	.4683339	1 5.7	27	15 42 58.26	15 43 5.6	.5890464	21 20.3
12	16 24 6.85	26 26 53.5	.4628493	1 0.6	28	15 44 47.21	15 44 40.9	.5962147	21 18.3
13	16 22 45.08	26 15 7.7	.4576397	0 55.3	29	15 46 42.76	15 46 56.4	.6033583	21 16.4
14	16 21 14.38	26 2 18.8	.4527282	0 49.8	30	15 48 44.71	15 49 49.8	.6104719	21 14.6
15	16 19 35.21	25 48 27.1	.4481383	0 44.3	31	15 50 52.85	15 53 18.8	.6175500	21 12.9
16	16 17 48.13	25 33 33.5	.4438931	0 38.6	32	15 53 6.99	S. 15 57 21.0	.96245884	21 11.2
17	16 15 53.80	25 17 39.3	.4400146	0 32.7					
18	16 13 52.95	25 0 46.6	.4365241	0 26.8					
19	16 11 46.35	S. 24 42 57.6	9.4334418	0 20.8					

	H. P.	S. D.		H. P.	S. D.		H. P.	S. D.		H. P.	S. D.
Oct. 4	16.55	15.82	Oct. 28	24.12	23.05	Nov. 21	32.80	31.35	Dec. 15	27.56	26.34
8	17.54	16.76	Nov. 1	25.76	24.62	25	33.12	31.65	19	25.87	24.72
12	18.62	17.79	5	27.46	26.24	29	32.85	31.39	23	24.22	23.15
16	19.82	18.94	9	29.14	27.85	Dec. 3	32.03	30.61	27	22.67	21.67
20	21.13	20.19	13	30.68	29.32	7	30.77	29.41	31	21.23	20.29
24	22.57	21.57	17	31.95	30.53	11	29.24	27.94	35	19.91	19.03

Mean Noon.	Apparent Light Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Light Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Jan. 1	14 6 54.01	S. 11 28 5.6	0.2471414	19 24.1	Feb. 16	15 47 38.12	S. 18 52 42.7	0.1167490	18 3.5
2	14 9 7.65	11 39 58.8	.2447881	19 22.4	17	15 49 44.32	18 59 51.0	.1133760	18 1.6
3	14 11 21.26	11 51 46.8	.2424147	19 20.7	18	15 51 50.12	19 6 52.6	.1099781	17 59.8
4	14 13 34.83	12 3 29.5	.2400215	19 19.0	19	15 53 55.50	19 13 47.6	.1065552	17 57.9
5	14 15 48.37	12 15 6.9	.2376082	19 17.2	20	15 56 0.44	19 20 36.0	.1031072	17 56.1
6	14 18 1.87	12 26 39.0	.2351749	19 15.5	21	15 58 4.91	19 27 17.8	.0996340	17 54.2
7	14 20 15.32	12 38 5.7	.2327215	19 13.8	22	16 0 8.90	19 33 53.0	.0961356	17 52.3
8	14 22 28.73	12 49 26.9	.2302478	19 12.1	23	16 2 12.39	19 40 21.7	.0926120	17 50.4
9	14 24 42.10	13 0 42.5	.2277540	19 10.4	24	16 4 15.35	19 46 43.8	.0890631	17 48.5
10	14 26 55.43	13 11 52.6	.2252397	19 8.7	25	16 6 17.77	19 52 59.4	.0854892	17 46.6
11	14 29 8.70	13 22 57.0	.2227052	19 6.9	26	16 8 19.63	19 59 8.6	.0818899	17 44.7
12	14 31 21.92	13 33 55.8	.2201498	19 5.2	27	16 10 20.91	20 5 11.4	.0782655	17 42.8
13	14 33 35.10	13 44 48.8	.2175738	19 3.5	28	16 12 21.58	20 11 7.8	.0746160	17 40.8
14	14 35 48.23	13 55 36.1	.2149769	19 1.8	Mar. 1	16 14 21.64	20 16 57.8	.0709414	17 38.9
15	14 38 1.30	14 6 17.5	.2123587	19 0.0	2	16 16 21.06	20 22 41.6	.0672418	17 36.9
16	14 40 14.31	14 16 53.1	.2097193	18 58.3	3	16 18 19.81	20 28 19.2	.0635172	17 35.0
17	14 42 27.24	14 27 22.7	.2070584	18 56.6	4	16 20 17.88	20 33 50.6	.0597677	17 33.0
18	14 44 40.10	14 37 46.4	.2043757	18 54.8	5	16 22 15.26	20 39 15.8	.0559933	17 31.0
19	14 46 52.88	14 48 4.0	.2016710	18 53.1	6	16 24 11.93	20 44 35.1	.0521940	17 29.0
20	14 49 5.57	14 58 15.6	.1989443	18 51.4	7	16 26 7.86	20 49 48.4	.0483700	17 27.0
21	14 51 18.14	15 8 20.8	.1961954	18 49.7	8	16 28 3.04	20 54 55.9	.0445212	17 24.9
22	14 53 30.61	15 18 19.9	.1934242	18 47.9	9	16 29 57.44	20 59 57.5	.0406473	17 22.9
23	14 55 42.95	15 28 12.8	.1906305	18 46.2	10	16 31 51.04	21 4 53.4	.0367485	17 20.8
24	14 57 55.17	15 37 59.4	.1878145	18 44.5	11	16 33 43.84	21 9 43.7	.0328248	17 18.8
25	15 0 7.24	15 47 39.6	.1849760	18 42.7	12	16 35 35.80	21 14 28.4	.0288757	17 16.7
26	15 2 19.16	15 57 13.4	.1821149	18 41.0	13	16 37 26.90	21 19 7.7	.0249014	17 14.6
27	15 4 30.92	16 6 40.8	.1792312	18 39.2	14	16 39 17.11	21 23 41.7	.0209015	17 12.5
28	15 6 42.50	16 16 1.8	.1763249	18 37.5	15	16 41 6.41	21 28 10.5	.0168761	17 10.4
29	15 8 53.90	16 25 16.2	.1733958	18 35.7	16	16 42 54.76	21 32 34.1	.0128249	17 8.2
30	15 11 5.12	16 34 24.1	.1704443	18 34.0	17	16 44 42.13	21 36 52.6	.0087479	17 6.0
31	15 13 16.13	16 43 25.4	.1671700	18 32.2	18	16 46 28.49	21 41 6.1	.0046453	17 3.9
Feb. 1	15 15 26.94	16 52 20.1	.1644731	18 30.4	19	16 48 13.80	21 45 14.8	.0005168	17 1.7
2	15 17 37.53	17 1 8.2	.1614534	18 28.7	20	16 49 58.03	21 49 18.7	.99963628	16 59.5
3	15 19 47.89	17 9 49.7	.1584110	18 26.9	21	16 51 41.13	21 53 18.1	.9921834	16 57.2
4	15 21 58.02	17 18 24.5	.1553458	18 25.1	22	16 53 23.08	21 57 12.9	.9879785	16 55.0
5	15 24 7.91	17 26 52.7	.1522577	18 23.4	23	16 55 3.85	22 1 3.4	.9837486	16 52.7
6	15 26 17.55	17 35 14.2	.1491468	18 21.6	24	16 56 43.39	22 4 49.6	.9794938	16 50.4
7	15 28 26.93	17 43 29.0	.1460130	18 19.8	25	16 58 21.66	22 8 31.6	.9752146	16 48.1
8	15 30 36.03	17 51 37.2	.1428559	18 18.0	26	16 59 58.63	22 12 9.6	.9709111	16 45.8
9	15 32 44.87	17 59 38.7	.1396758	18 16.2	27	17 1 34.25	22 15 43.7	.9665838	16 43.4
10	15 34 53.42	18 7 33.6	.1364722	18 14.4	28	17 3 8.52	22 19 14.1	.9622330	16 41.0
11	15 37 1.68	18 15 21.8	.1332452	18 12.6	29	17 4 41.37	22 22 40.9	.9578592	16 38.6
12	15 39 9.64	18 23 3.3	.1299945	18 10.8	30	17 6 12.77	22 26 4.2	.9534627	16 36.2
13	15 41 17.28	18 30 38.1	.1267197	18 9.0	31	17 7 42.69	22 29 24.2	.9490441	16 33.7
14	15 43 24.58	18 38 6.3	.1234207	18 7.1	Apr. 1	17 9 11.10	22 32 41.0	.9446039	16 31.2
15	15 45 31.54	18 45 27.8	.1200972	18 5.3	2	17 10 37.96	22 35 54.8	.9401424	16 28.7
16	15 47 38.12	S. 18 52 42.7	0.1167490	18 3.5	3	17 12 3.23	S. 22 39 5.7	.9356603	16 26.2

		Hor. Par.	Semidiameter.			Hor. Par.	Semidiameter.
January	1	4.98	2.65	February	20	6.94	3.69
	11	5.27	2.81	March	2	7.54	4.01
	21	5.60	2.98		12	8.23	4.38
	31	5.98	3.18		22	9.05	4.82
February	10	6.43	3.42	April	1	10.00	5.32

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Apr. 3	17 12 3·23	S. 22 39 5·7	9·9356603	16 26·2	May 19	17 35 40·25	S. 24 56 31·7	9·7251158	13 47·5
4	17 13 26·87	22 42 13·9	·9311580	16 23·6	20	17 35 0·65	24 59 45·3	·7212116	13 42·9
5	17 14 48·85	22 45 19·6	·9266362	16 21·0	21	17 34 17·76	25 2 58·2	·7173879	13 38·2
6	17 16 9·14	22 48 23·0	·9220950	16 18·4	22	17 33 31·60	25 6 9·9	·7136492	13 33·5
7	17 17 27·69	22 51 24·2	·9175352	16 15·7	23	17 32 42·21	25 9 20·2	·7100003	13 28·7
8	17 18 44·48	22 54 23·3	·9129572	16 13·1	24	17 31 49·67	25 12 28·6	·7064459	13 23·9
9	17 19 59·45	22 57 20·6	·9083614	16 10·4	25	17 30 54·05	25 15 34·8	·7029904	13 19·0
10	17 21 12·57	23 0 16·3	·9037482	16 7·6	26	17 29 55·40	25 18 38·4	·6996385	13 14·1
11	17 22 23·79	23 3 10·4	·8991183	16 4·9	27	17 28 53·86	25 21 39·0	·6963945	13 9·1
12	17 23 33·06	23 6 3·2	·8944721	16 2·1	28	17 27 49·53	25 24 36·1	·6932630	13 4·1
13	17 24 40·33	23 8 54·9	·8898103	15 59·2	29	17 26 42·50	25 27 29·7	·6902477	12 59·0
14	17 25 45·55	23 11 45·6	·8851336	15 56·3	30	17 25 32·93	25 30 19·2	·6873532	12 53·9
15	17 26 48·66	23 14 35·5	·8804429	15 53·4	31	17 24 20·94	25 33 4·2	·6845829	12 48·8
16	17 27 49·61	23 17 24·7	·8757391	15 50·5	June 1	17 23 6·67	25 35 44·4	·6819404	12 43·6
17	17 28 48·34	23 20 13·4	·8710231	15 47·5	2	17 21 50·28	25 38 19·6	·6794290	12 38·4
18	17 29 44·79	23 23 1·8	·8662963	15 44·5	3	17 20 31·91	25 40 49·2	·6770521	12 33·2
19	17 30 38·90	23 25 50·1	·8615600	15 41·4	4	17 19 11·75	25 43 13·3	·6748123	12 27·9
20	17 31 30·61	23 28 38·4	·8568155	15 38·3	5	17 17 49·96	25 45 31·4	·6727121	12 22·6
21	17 32 19·88	23 31 26·9	·8520643	15 35·2	6	17 16 26·69	25 47 43·3	·6707540	12 17·3
22	17 33 6·65	23 34 15·6	·8473080	15 32·0	7	17 15 2·13	25 49 48·8	·6689400	12 11·9
23	17 33 50·86	23 37 4·7	·8425480	15 28·8	8	17 13 36·46	25 51 47·7	·6672722	12 6·6
24	17 34 32·45	23 39 54·4	·8377863	15 25·5	9	17 12 9·85	25 53 39·6	·6657524	12 1·2
25	17 35 11·38	23 42 44·7	·8330248	15 22·2	10	17 10 42·50	25 55 24·8	·6643824	11 55·8
26	17 35 47·59	23 45 35·8	·8282654	15 18·8	11	17 9 14·57	25 57 2·9	·6631635	11 50·4
27	17 36 21·03	23 48 27·6	·8235104	15 15·4	12	17 7 46·29	25 58 33·8	·6620969	11 45·0
28	17 36 51·66	23 51 20·6	·8187619	15 12·0	13	17 6 17·84	25 59 57·5	·6611834	11 39·6
29	17 37 19·43	23 54 14·6	·8140221	15 8·5	14	17 4 49·44	26 1 14·1	·6604236	11 34·2
30	17 37 44·29	23 57 9·8	·8092933	15 4·9	15	17 3 21·29	26 2 23·4	·6598180	11 28·8
May 1	17 38 6·22	24 0 6·3	·8045779	15 1·3	16	17 1 53·59	26 3 25·8	·6593664	11 23·4
2	17 38 25·16	24 3 4·0	·7998784	14 57·7	17	17 0 26·55	26 4 21·2	·6590687	11 18·1
3	17 38 41·08	24 6 3·1	·7951972	14 54·0	18	16 59 0·36	26 5 9·8	·6589243	11 12·7
4	17 38 53·95	24 9 3·5	·7905369	14 50·2	19	16 57 35·22	26 5 51·8	·6589324	11 7·4
5	17 39 3·74	24 12 5·3	·7859001	14 46·4	20	16 56 11·35	26 6 27·4	·6590916	11 2·1
6	17 39 10·40	24 15 8·5	·7812894	14 42·6	21	16 54 48·96	26 6 56·9	·6594004	10 56·8
7	17 39 13·92	24 18 13·1	·7767076	14 38·7	22	16 53 28·24	26 7 20·6	·6598569	10 51·6
8	17 39 14·26	24 21 19·1	·7721574	14 34·7	23	16 52 9·42	26 7 39·0	·6604590	10 46·3
9	17 39 11·37	24 24 26·4	·7676416	14 30·7	24	16 50 52·65	26 7 52·4	·6612039	10 41·1
10	17 39 5·25	24 27 35·0	·7631632	14 26·6	25	16 49 38·13	26 8 1·0	·6620888	10 36·0
11	17 38 55·84	24 30 44·9	·7587254	14 22·5	26	16 48 26·02	26 8 5·6	·6631106	10 30·9
12	17 38 43·15	24 33 56·0	·7543315	14 18·3	27	16 47 16·50	26 8 6·4	·6642660	10 25·8
13	17 38 27·12	24 37 8·0	·7499850	14 14·1	28	16 46 9·72	26 8 4·0	·6655509	10 20·8
14	17 38 7·74	24 40 20·9	·7456892	14 9·8	29	16 45 5·82	26 7 58·8	·6669614	10 15·8
15	17 37 44·99	24 43 34·5	·7414485	14 5·5	30	16 44 4·91	26 7 51·3	·6684934	10 10·9
16	17 37 18·87	24 46 48·6	·7372666	14 1·1	July 1	16 43 7·14	26 7 42·1	·6701419	10 6·1
17	17 36 49·36	24 50 3·0	·7331478	13 56·6	2	16 42 12·58	26 7 31·5	·6719034	10 1·3
18	17 36 16·49	24 53 17·5	·7290960	13 52·1	3	16 41 21·35	26 7 20·2	·6737735	9 56·5
19	17 35 40·25	S. 24 56 31·7	9·7251158	13 47·5	4	16 40 33·50	S. 26 7 8·3	9·6757480	9 51·8

		Hor. Par.	Semidiameter.			Hor. Par.	Semidiameter.
April	11	11"·10	5"·90	May	31	18"·19	9"·68
	21	12"·37	6"·58	June	10	19"·06	10"·14
May	1	13"·80	7"·34		20	19"·29	10"·26
	11	15"·34	8"·16		30	18"·88	10"·04
	21	16"·87	8"·97	July	10	17"·99	9"·57

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
July 4	16 40 33.50	S. 26 7 8.3	9.6757480	9 51.8	Aug. 19	17 6 16.93	S. 26 37 5.7	9.8196966	7 17.9
5	16 39 49.11	26 6 56.5	.6778213	9 47.1	20	17 8 31.21	26 38 8.9	.8231007	7 15.7
6	16 39 8.22	26 6 45.1	.6799899	9 42.5	21	17 10 17.78	26 39 9.5	.8264967	7 13.5
7	16 38 30.89	26 6 34.4	.6822497	9 38.0	22	17 12 6.58	26 40 7.2	.8298839	7 11.4
8	16 37 57.17	26 6 24.8	.6845967	9 33.6	23	17 13 57.56	26 41 1.8	.8332616	7 9.4
9	16 37 27.07	26 6 16.7	.6870266	9 29.2	24	17 15 50.71	26 41 53.0	.8366290	7 7.3
10	16 37 0.63	26 6 10.1	.6895356	9 24.8	25	17 17 45.96	26 42 40.5	.8399857	7 5.3
11	16 36 37.88	26 6 5.6	.6921202	9 20.5	26	17 19 43.26	26 43 24.0	.8433307	7 3.3
12	16 36 18.82	26 6 3.2	.6947762	9 16.3	27	17 21 42.58	26 44 3.3	.8466639	7 1.4
13	16 36 3.47	26 6 3.3	.6975003	9 12.1	28	17 23 43.86	26 44 38.0	.8499845	6 59.5
14	16 35 51.83	26 6 6.0	.7002886	9 8.0	29	17 25 47.05	26 45 8.0	.8532925	6 57.6
15	16 35 43.92	26 6 11.4	.7031380	9 4.0	30	17 27 52.10	26 45 32.9	.8565871	6 55.8
16	16 35 39.73	26 6 19.8	.7060446	9 0.0	Sept. 1	17 29 58.96	26 45 52.6	.8598687	6 54.0
17	16 35 39.26	26 6 31.3	.7090054	8 56.1	2	17 32 7.61	26 46 6.5	.8631370	6 52.2
18	16 35 42.50	26 6 45.9	.7120170	8 52.2	3	17 34 17.96	26 46 14.5	.8663920	6 50.4
19	16 35 49.46	26 7 3.9	.7150763	8 48.4	4	17 36 29.98	26 46 16.3	.8696336	6 48.7
20	16 36 0.10	26 7 25.2	.7181801	8 44.7	5	17 38 43.63	26 46 11.7	.8728618	6 47.0
21	16 36 14.42	26 7 49.9	.7213254	8 41.0	6	17 40 58.89	26 46 0.3	.8760767	6 45.3
22	16 36 32.38	26 8 18.0	.7245091	8 37.4	7	17 43 15.68	26 45 41.9	.8792782	6 43.6
23	16 36 53.99	26 8 49.6	.7277282	8 33.9	8	17 45 33.98	26 45 16.3	.8824666	6 42.0
24	16 37 19.22	26 9 24.6	.7309796	8 30.4	9	17 47 53.76	26 44 43.3	.8856419	6 40.4
25	16 37 48.02	26 10 3.1	.7342605	8 27.0	10	17 50 14.99	26 44 2.5	.8888042	6 38.8
26	16 38 20.36	26 10 44.9	.7375679	8 23.6	11	17 52 37.60	26 43 13.7	.8919536	6 37.2
27	16 38 56.23	26 11 30.0	.7408990	8 20.3	12	17 55 1.58	26 42 16.7	.8950904	6 35.7
28	16 39 35.54	26 12 13.4	.7442513	8 17.0	13	17 57 26.89	26 41 11.3	.8982145	6 34.2
29	16 40 18.28	26 13 10.0	.7476220	8 13.8	14	17 59 53.51	26 39 57.2	.9013263	6 32.7
30	16 41 4.40	26 14 4.5	.7510089	8 10.7	15	18 2 21.39	26 38 34.3	.9044256	6 31.2
31	16 41 53.81	26 15 1.9	.7544096	8 7.6	16	18 4 50.52	26 37 2.3	.9075126	6 29.8
Aug. 1	16 42 46.48	26 16 1.9	.7578222	8 4.5	17	18 7 20.86	26 35 20.9	.9105875	6 28.4
2	16 43 42.34	26 17 4.4	.7612445	8 1.5	18	18 9 52.39	26 33 30.1	.9136500	6 27.0
3	16 44 41.32	26 18 9.2	.7646748	7 58.6	19	18 12 25.08	26 31 29.7	.9167004	6 25.6
4	16 45 43.39	26 19 16.1	.7681117	7 55.7	20	18 14 58.89	26 29 19.4	.9197386	6 24.2
5	16 46 48.47	26 20 24.7	.7715537	7 52.9	21	18 17 33.81	26 26 59.0	.9227642	6 22.8
6	16 47 56.50	26 21 34.9	.7749994	7 50.1	22	18 20 9.78	26 24 28.5	.9257773	6 21.5
7	16 49 7.43	26 22 46.3	.7784477	7 47.4	23	18 22 46.81	26 21 47.7	.9287777	6 20.2
8	16 50 21.22	26 23 53.8	.7818976	7 44.7	24	18 25 24.83	26 18 56.4	.9317654	6 18.9
9	16 51 37.80	26 25 12.1	.7853478	7 42.0	25	18 28 3.82	26 15 54.5	.9347402	6 17.6
10	16 52 57.13	26 26 25.9	.7887978	7 39.4	26	18 30 43.73	26 12 41.7	.9377019	6 16.3
11	16 54 19.16	26 27 40.0	.7922464	7 36.8	27	18 33 24.55	26 9 18.1	.9406509	6 15.1
12	16 55 43.84	26 28 53.9	.7956929	7 34.3	28	18 36 6.21	26 5 43.4	.9435869	6 13.8
13	16 57 11.11	26 30 7.5	.7991363	7 31.8	29	18 38 48.70	26 1 57.6	.9465099	6 12.6
14	16 58 40.95	26 31 20.4	.8025760	7 29.4	30	18 41 31.96	25 58 0.6	.9494204	6 11.4
15	17 0 13.29	26 32 32.4	.8060114	7 27.0	Oct. 1	18 44 15.97	25 53 52.3	.9523181	6 10.2
16	17 1 48.09	26 33 43.2	.8094417	7 24.7	2	18 47 0.70	25 49 32.4	.9552035	6 9.0
17	17 3 25.34	26 34 52.5	.8128664	7 22.4	3	18 49 46.11	25 45 0.9	.9580768	6 7.8
18	17 5 4.96	26 36 0.2	.8162849	7 20.1	4	18 52 32.16	25 40 17.8	.9609380	6 6.6
19	17 6 46.95	S. 26 37 5.7	9.8196966	7 17.9					

		Hor. Par.	Semidiameter.			Hor. Par.	Semidiameter.
July	20	16.84	8.95	September	8	11.45	6.09
	30	15.61	8.31		18	10.66	5.67
August	9	14.43	7.68		28	9.95	5.29
	19	13.33	7.09	October	8	9.32	4.96
	29	12.34	6.56		18	8.75	4.66

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Oct. 4	18 55 18.83	S. 25 35 22.9	9.9637876	6 5.5	Nov. 19	21 7 43.05	S. 18 13 16.6	0.0843527	5 16.6
5	18 58 6.09	25 30 16.2	.9666257	6 4.3	20	21 10 35.19	17 59 18.7	.0867749	5 15.5
6	19 0 53.91	25 24 57.5	.9694524	6 3.2	21	21 13 27.13	17 45 11.6	.0891891	5 14.4
7	19 3 42.25	25 19 26.7	.9722682	6 2.0	22	21 16 18.85	17 30 55.2	.0915953	5 13.3
8	19 6 31.10	25 13 43.9	.9750732	6 0.9	23	21 19 10.36	17 16 29.8	.0939934	5 12.2
9	19 9 20.43	25 7 49.0	.9778677	5 59.8	24	21 22 1.64	17 1 55.4	.0963835	5 11.2
10	19 12 10.22	25 1 41.8	.9806517	5 58.7	25	21 24 52.68	16 47 12.3	.0987655	5 10.1
11	19 15 0.45	24 55 22.5	.9834257	5 57.6	26	21 27 43.48	16 32 20.6	.1011395	5 9.0
12	19 17 51.08	24 48 50.8	.9861896	5 56.5	27	21 30 34.03	16 17 20.6	.1035056	5 7.9
13	19 20 42.10	24 42 6.8	.9889437	5 55.4	28	21 33 24.32	16 2 12.3	.1058638	5 6.8
14	19 23 33.50	24 35 10.5	.9916879	5 54.3	29	21 36 14.36	15 46 56.0	.1082142	5 5.7
15	19 26 25.24	24 28 1.8	.9944226	5 53.2	30	21 39 4.13	15 31 31.8	.1105569	5 4.5
16	19 29 17.32	24 20 40.7	.9971478	5 52.1	Dec. 1	21 41 53.62	15 15 59.8	.1128919	5 3.4
17	19 32 9.71	24 13 7.2	9.9998636	5 51.1	2	21 44 42.84	15 0 20.3	.1152194	5 2.3
18	19 35 2.39	24 5 21.4	0.0025698	5 50.0	3	21 47 31.79	14 44 33.4	.1175395	5 1.2
19	19 37 55.34	23 57 23.1	.0052664	5 49.0	4	21 50 20.46	14 28 39.2	.1198522	5 0.0
20	19 40 48.55	23 49 12.5	.0079535	5 47.9	5	21 53 8.85	14 12 38.0	.1221577	4 58.9
21	19 43 42.00	23 40 49.6	.0106309	5 46.9	6	21 55 56.97	13 56 29.9	.1244560	4 57.8
22	19 46 35.66	23 32 14.3	.0132985	5 45.8	7	21 58 44.82	13 40 15.1	.1267473	4 56.6
23	19 49 29.50	23 23 26.8	.0159562	5 44.8	8	22 1 32.39	13 23 53.7	.1290316	4 55.5
24	19 52 23.50	23 14 27.1	.0186042	5 43.7	9	22 4 19.69	13 7 25.8	.1313091	4 54.3
25	19 55 17.64	23 5 15.2	.0212423	5 42.7	10	22 7 6.73	12 50 51.7	.1335796	4 53.2
26	19 58 11.90	22 55 51.2	.0238706	5 41.6	11	22 9 53.50	12 34 11.5	.1358432	4 52.0
27	20 1 6.24	22 46 15.2	.0264891	5 40.6	12	22 12 40.01	12 17 25.3	.1381000	4 50.8
28	20 4 0.66	22 36 27.2	.0290979	5 39.6	13	22 15 26.27	12 0 33.4	.1403498	4 49.7
29	20 6 55.12	22 26 27.3	.0316973	5 38.5	14	22 18 12.28	11 43 35.8	.1425925	4 48.5
30	20 9 49.61	22 16 15.6	.0342874	5 37.5	15	22 20 58.05	11 26 32.8	.1448282	4 47.3
31	20 12 44.11	22 5 52.1	.0368683	5 36.5	16	22 23 43.58	11 9 24.4	.1470566	4 46.1
Nov. 1	20 15 38.61	21 55 16.9	.0394401	5 35.4	17	22 26 28.87	10 52 11.0	.1492775	4 44.9
2	20 18 33.07	21 44 30.2	.0420030	5 34.4	18	22 29 13.94	10 34 52.6	.1514910	4 43.7
3	20 21 27.48	21 33 31.9	.0445574	5 33.4	19	22 31 58.76	10 17 29.4	.1536969	4 42.5
4	20 24 21.84	21 22 22.2	.0471032	5 32.3	20	22 34 43.35	10 0 1.7	.1558950	4 41.3
5	20 27 16.12	21 11 1.2	.0496407	5 31.3	21	22 37 27.71	9 42 29.5	.1580854	4 40.1
6	20 30 10.32	20 59 29.0	.0521700	5 30.3	22	22 40 11.83	9 24 53.2	.1602679	4 38.9
7	20 33 4.43	20 47 45.6	.0546912	5 29.2	23	22 42 55.73	9 7 12.9	.1624426	4 37.7
8	20 35 58.43	20 35 51.2	.0572046	5 28.2	24	22 45 39.40	8 49 28.8	.1646094	4 36.5
9	20 38 52.30	20 23 45.9	.0597102	5 27.1	25	22 48 22.84	8 31 40.9	.1667683	4 35.3
10	20 41 46.05	20 11 29.8	.0622082	5 26.1	26	22 51 6.05	8 13 49.6	.1689194	4 34.1
11	20 44 39.66	19 59 3.0	.0646986	5 25.0	27	22 53 49.04	7 55 55.0	.1710625	4 32.8
12	20 47 33.13	19 46 25.5	.0671816	5 24.0	28	22 56 31.82	7 37 57.3	.1731978	4 31.6
13	20 50 26.46	19 33 37.6	.0696570	5 22.9	29	22 59 14.37	7 19 56.5	.1753253	4 30.4
14	20 53 19.65	19 20 39.3	.0721252	5 21.9	30	23 1 56.70	7 1 53.0	.1774449	4 29.1
15	20 56 12.67	19 7 30.7	.0745859	5 20.8	31	23 4 38.83	6 43 46.9	.1795568	4 27.9
16	20 59 5.52	18 54 12.0	.0770391	5 19.8	32	23 7 20.75	S. 6 25 38.4	0.1816610	4 26.7
17	21 1 58.21	18 40 43.3	.0794847	5 18.7					
18	21 4 50.72	18 27 4.8	.0819226	5 17.6					
19	21 7 43.05	S. 18 13 16.6	0.0843527	5 16.6					

		Hor. Par.	Semidiameter.			Hor. Par.	Semidiameter.
October	28	8.23	4.38	December	7	6.57	3.50
November	7	7.76	4.13		17	6.24	3.32
	17	7.33	3.90		27	5.93	3.16
	27	6.93	3.69		37	5.65	3.01

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Jan. 1	13 542.85	S. 535 11.4	0.7390304	18 21.5	Feb. 16	13 10 56.55	S. 54 50.7	0.6798105	15 25.5
2	13 6 4.33	537 8.6	.7377574	18 18.0	17	13 10 47.13	55 37.8	.6786631	15 21.4
3	13 6 25.22	539 2.1	.7364785	18 14.4	18	13 10 37.03	55 20.9	.6775295	15 17.3
4	13 6 45.53	540 51.8	.7351941	18 10.8	19	13 10 26.25	55 1 0.0	.6764102	15 13.2
5	13 7 5.25	542 37.7	.7339044	18 7.2	20	13 10 14.80	54 35.2	.6753059	15 9.1
6	13 7 24.37	544 19.7	.7326098	18 3.5	21	13 10 2.68	54 6.4	.6742170	15 4.9
7	13 7 42.88	545 57.8	.7313106	17 59.9	22	13 9 49.90	54 33.8	.6731441	15 0.8
8	13 8 0.78	547 32.0	.7300071	17 56.3	23	13 9 36.47	54 45.73	.6720879	14 56.6
9	13 8 18.07	549 2.3	.7286997	17 52.6	24	13 9 22.40	54 3 17.0	.6710488	14 52.5
10	13 8 34.74	550 28.6	.7273886	17 49.0	25	13 9 7.69	54 1 33.0	.6700274	14 48.3
11	13 8 50.78	551 51.0	.7260741	17 45.3	26	13 8 52.35	53 45.4	.6690242	14 44.1
12	13 9 6.19	553 9.4	.7247565	17 41.6	27	13 8 36.40	53 37.54	.6680399	14 39.9
13	13 9 20.97	554 23.7	.7234362	17 37.9	28	13 8 19.84	53 35.59	.6670748	14 35.7
14	13 9 35.11	555 34.1	.7221134	17 34.2	Mar. 1	13 8 2.68	53 34 1.2	.6661296	14 31.5
15	13 9 48.60	556 40.4	.7207885	17 30.5	2	13 7 44.93	53 1 59.6	.6652047	14 27.2
16	13 10 1.44	557 42.7	.7194618	17 26.7	3	13 7 26.61	52 29 54.7	.6643007	14 23.0
17	13 10 13.63	558 40.8	.7181338	17 23.0	4	13 7 7.73	52 27 46.6	.6634181	14 18.7
18	13 10 25.16	559 34.8	.7168047	17 19.3	5	13 6 48.30	52 25 35.3	.6625573	14 14.5
19	13 10 36.01	6 0 24.6	.7154749	17 15.5	6	13 6 28.33	52 23 20.9	.6617189	14 10.2
20	13 10 46.19	6 1 10.2	.7141448	17 11.7	7	13 6 7.84	52 1 3.5	.6609032	14 5.9
21	13 10 55.69	6 1 51.6	.7128149	17 8.0	8	13 5 46.85	51 18 43.2	.6601107	14 1.6
22	13 11 4.51	6 2 28.8	.7114855	17 4.2	9	13 5 25.36	51 16 20.1	.6593418	13 57.3
23	13 11 12.64	6 3 1.8	.7101571	17 0.4	10	13 5 3.39	51 13 54.3	.6585968	13 53.0
24	13 11 20.08	6 3 30.5	.7088301	16 56.5	11	13 4 40.95	51 11 25.9	.6578762	13 48.7
25	13 11 26.83	6 3 55.0	.7075050	16 52.7	12	13 4 18.06	51 8 54.9	.6571803	13 44.4
26	13 11 32.87	6 4 15.1	.7061823	16 48.9	13	13 3 54.74	51 6 21.5	.6565095	13 40.1
27	13 11 38.21	6 4 30.9	.7048624	16 45.0	14	13 3 30.99	51 3 45.7	.6558642	13 35.8
28	13 11 42.84	6 4 42.4	.7035458	16 41.1	15	13 3 6.84	51 1 7.7	.6552447	13 31.4
29	13 11 46.77	6 4 49.7	.7022330	16 37.3	16	13 2 42.29	45 58 27.5	.6546514	13 27.1
30	13 11 49.99	6 4 52.7	.7009244	16 33.4	17	13 2 17.36	45 55 45.2	.6540846	13 22.7
31	13 11 52.50	6 4 51.3	.6996206	16 29.5	18	13 1 52.07	45 53 1.0	.6535448	13 18.4
Feb. 1	13 11 54.30	6 4 45.7	.6983221	16 25.6	19	13 1 26.44	45 50 14.9	.6530323	13 14.0
2	13 11 55.39	6 4 35.7	.6970293	16 21.7	20	13 1 0.48	44 47 27.0	.6525474	13 9.7
3	13 11 55.77	6 4 21.5	.6957428	16 17.7	21	13 0 34.21	44 44 37.5	.6520904	13 5.3
4	13 11 55.44	6 4 2.9	.6944631	16 13.8	22	13 0 7.65	44 41 46.5	.6516617	13 0.9
5	13 11 54.40	6 3 40.0	.6931906	16 9.8	23	12 59 40.81	43 38 54.2	.6512614	12 56.5
6	13 11 52.65	6 3 12.9	.6919258	16 5.9	24	12 59 13.72	43 36 0.6	.6508899	12 52.2
7	13 11 50.19	6 2 41.5	.6906692	16 1.9	25	12 58 46.40	43 33 5.8	.6505474	12 47.8
8	13 11 47.03	6 2 5.9	.6894214	15 57.9	26	12 58 18.86	43 30 10.0	.6502341	12 43.4
9	13 11 43.16	6 1 26.1	.6881827	15 53.9	27	12 57 51.13	42 27 13.3	.6499503	12 39.0
10	13 11 38.58	6 0 42.1	.6869537	15 49.9	28	12 57 23.22	42 24 15.9	.6496961	12 34.6
11	13 11 33.31	559 53.9	.6857348	15 45.8	29	12 56 55.16	42 21 17.8	.6494716	12 30.2
12	13 11 27.35	559 1.5	.6845266	15 41.8	30	12 56 26.96	41 18 19.1	.6492770	12 25.8
13	13 11 20.69	558 5.0	.6833296	15 37.8	31	12 55 58.66	41 15 20.1	.6491123	12 21.4
14	13 11 13.33	557 4.3	.6821442	15 33.7	Apr. 1	12 55 30.27	41 12 20.9	.6489777	12 17.0
15	13 11 5.28	555 59.5	.6809710	15 29.6	2	12 55 1.81	4 9 21.6	.6488732	12 12.6
16	13 10 56.55	S. 554 50.7	0.6798105	15 25.5	3	12 54 33.30	S. 4 6 22.2	0.6487987	12 8.2

		Hor. Par.	Polar Semidiameter.			Hor. Par.	Polar Semidiameter.
January	1	1.61	16.76	February	20	1.86	19.42
	11	1.65	17.27	March	2	1.90	19.87
	21	1.71	17.81		12	1.94	20.24
	31	1.76	18.35		22	1.96	20.50
February	10	1.81	18.89	April	1	1.98	20.63



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Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Apr. 3	12 54 33.30	S. 4 6 22.2	0.6487987	12 8.2	May 19	12 37 2.75	S. 2 21 56.7	0.6746636	8 50.0
4	12 54 4.76	4 3 23.0	.6487544	12 3.8	20	12 36 51.05	2 20 57.3	.6757299	8 45.9
5	12 53 36.22	4 0 24.1	.6487401	11 59.4	21	12 36 39.97	2 20 2.0	.6768103	8 41.8
6	12 53 7.69	3 57 25.6	.6487559	11 55.0	22	12 36 29.54	2 19 10.9	.6779043	8 37.7
7	12 52 39.19	3 54 27.6	.6488017	11 50.6	23	12 36 19.74	2 18 24.1	.6790115	8 33.6
8	12 52 10.74	3 51 30.3	.6488773	11 46.2	24	12 36 10.59	2 17 41.5	.6801313	8 29.5
9	12 51 42.37	3 48 33.7	.6489825	11 41.8	25	12 36 2.09	2 17 3.2	.6812633	8 25.4
10	12 51 14.09	3 45 38.1	.6491172	11 37.4	26	12 35 54.24	2 16 29.2	.6824069	8 21.4
11	12 50 45.91	3 42 43.5	.6492813	11 33.0	27	12 35 47.05	2 15 59.5	.6835615	8 17.4
12	12 50 17.87	3 39 50.0	.6494748	11 28.6	28	12 35 40.52	2 15 34.1	.6847268	8 13.3
13	12 49 49.98	3 36 57.7	.6496974	11 24.2	29	12 35 34.65	2 15 13.1	.6859021	8 9.3
14	12 49 22.24	3 34 6.8	.6499491	11 19.8	30	12 35 29.45	2 14 56.4	.6870869	8 5.3
15	12 48 54.69	3 31 17.3	.6502297	11 15.4	31	12 35 24.92	2 14 44.1	.6882808	8 1.3
16	12 48 27.34	3 28 29.5	.6505390	11 11.0	June 1	12 35 21.05	2 14 36.1	.6894833	7 57.3
17	12 48 0.21	3 25 43.4	.6508767	11 6.6	2	12 35 17.85	2 14 32.4	.6906938	7 53.3
18	12 47 33.31	3 22 59.1	.6512426	11 2.3	3	12 35 15.32	2 14 33.1	.6919117	7 49.3
19	12 47 6.67	3 20 16.7	.6516366	10 57.9	4	12 35 13.45	2 14 38.1	.6931367	7 45.4
20	12 46 40.30	3 17 36.4	.6520583	10 53.5	5	12 35 12.24	2 14 47.4	.6943682	7 41.4
21	12 46 14.22	3 14 58.3	.6525076	10 49.2	6	12 35 11.70	2 15 1.0	.6956058	7 37.5
22	12 45 48.45	3 12 22.4	.6529842	10 44.8	7	12 35 11.82	2 15 18.8	.6968490	7 33.6
23	12 45 23.00	3 9 48.9	.6534877	10 40.4	8	12 35 12.60	2 15 40.9	.6980975	7 29.6
24	12 44 57.90	3 7 17.9	.6540179	10 36.1	9	12 35 14.03	2 16 7.2	.6993509	7 25.7
25	12 44 33.16	3 4 49.5	.6545743	10 31.8	10	12 35 16.12	2 16 37.8	.7006087	7 21.8
26	12 44 8.79	3 2 23.8	.6551566	10 27.4	11	12 35 18.87	2 17 12.5	.7018706	7 18.0
27	12 43 44.82	3 0 0.8	.6557644	10 23.1	12	12 35 22.27	2 17 51.5	.7031362	7 14.1
28	12 43 21.25	2 57 40.7	.6563973	10 18.8	13	12 35 26.32	2 18 34.6	.7044051	7 10.2
29	12 42 58.11	2 55 23.6	.6570549	10 14.5	14	12 35 31.01	2 19 21.9	.7056769	7 6.4
30	12 42 35.41	2 53 9.6	.6577377	10 10.2	15	12 35 36.35	2 20 13.3	.7069513	7 2.5
May 1	12 42 13.16	2 50 58.7	.6584423	10 5.9	16	12 35 42.34	2 21 8.9	.7082278	6 58.7
2	12 41 51.38	2 48 51.0	.6591713	10 1.6	17	12 35 48.97	2 22 8.5	.7095062	6 54.9
3	12 41 30.08	2 46 46.7	.6599231	9 57.3	18	12 35 56.24	2 23 12.2	.7107859	6 51.1
4	12 41 9.27	2 44 45.7	.6606973	9 53.0	19	12 36 4.14	2 24 19.9	.7120667	6 47.3
5	12 40 48.97	2 42 48.2	.6614934	9 48.8	20	12 36 12.68	2 25 31.7	.7133481	6 43.5
6	12 40 29.18	2 40 54.2	.6623109	9 44.5	21	12 36 21.85	2 26 47.5	.7146298	6 39.7
7	12 40 9.92	2 39 3.8	.6631493	9 40.3	22	12 36 31.65	2 28 7.2	.7159114	6 35.9
8	12 39 51.19	2 37 17.0	.6640081	9 36.0	23	12 36 42.08	2 29 30.9	.7171926	6 32.2
9	12 39 33.00	2 35 34.0	.6648868	9 31.8	24	12 36 53.14	2 30 58.5	.7184729	6 28.4
10	12 39 15.36	2 33 54.7	.6657849	9 27.6	25	12 37 4.81	2 32 30.0	.7197522	6 24.7
11	12 38 58.29	2 32 19.2	.6667019	9 23.4	26	12 37 17.10	2 34 5.4	.7210300	6 21.0
12	12 38 41.78	2 30 47.5	.6676373	9 19.2	27	12 37 30.00	2 35 44.6	.7223060	6 17.3
13	12 38 25.84	2 29 19.7	.6685907	9 15.0	28	12 37 43.51	2 37 27.6	.7235797	6 13.6
14	12 38 10.49	2 27 55.8	.6695617	9 10.8	29	12 37 57.62	2 39 14.4	.7248508	6 9.9
15	12 37 55.74	2 26 35.9	.6705498	9 6.6	30	12 38 12.33	2 41 4.8	.7261191	6 6.2
16	12 37 41.58	2 25 20.0	.6715547	9 2.4	July 1	12 38 27.63	2 42 58.9	.7273842	6 2.5
17	12 37 28.02	2 24 8.1	.6725755	8 58.3	2	12 38 43.50	2 44 56.6	.7286458	5 58.8
18	12 37 15.07	2 23 0.3	.6736120	8 54.2	3	12 38 59.96	2 46 57.9	.7299036	5 55.2
19	12 37 2.75	S. 2 21 56.7	0.6746636	8 50.0	4	12 39 17.00	S. 2 49 2.8	0.7311574	5 51.5

		Hor. Par.	Polar Semidiameter.			Hor. Par.	Polar Semidiameter.
April	11	1.97	20.61	May	31	1.80	18.84
	21	1.96	20.46	June	10	1.75	18.31
May	1	1.93	20.18		20	1.70	17.79
	11	1.90	19.80		30	1.65	17.27
	21	1.85	19.34	July	10	1.61	16.78

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
July 4	12 39 17.00	S. 2 49 2.8	0.7311574	5 51.5	Aug. 19	13 1 10.91	S. 5 17 21.5	0.7809067	3 12.5
5	12 39 34.60	2 51 11.2	.7324069	5 47.9	20	13 1 49.05	5 21 28.5	.7817556	3 9.2
6	12 39 52.76	2 53 23.0	.7336519	5 44.3	21	13 2 27.51	5 25 37.1	.7825927	3 5.9
7	12 40 11.48	2 55 38.2	.7348921	5 40.7	22	13 3 6.29	5 29 47.3	.7834178	3 2.6
8	12 40 30.75	2 57 56.9	.7361273	5 37.0	23	13 3 45.39	5 33 59.1	.7842309	2 59.4
9	12 40 50.56	3 0 18.9	.7373573	5 33.4	24	13 4 24.81	5 38 12.4	.7850319	2 56.1
10	12 41 10.92	3 2 44.2	.7385818	5 29.8	25	13 5 4.53	5 42 27.2	.7858206	2 52.8
11	12 41 31.81	3 5 12.8	.7398007	5 26.3	26	13 5 44.55	5 46 43.5	.7865969	2 49.5
12	12 41 53.24	3 7 44.6	.7410138	5 22.7	27	13 6 24.86	5 51 1.1	.7873608	2 46.3
13	12 42 15.19	3 10 19.6	.7422208	5 19.1	28	13 7 5.46	5 55 20.1	.7881122	2 43.0
14	12 42 37.67	3 12 57.8	.7434214	5 15.6	29	13 7 46.35	5 59 40.5	.7888510	2 39.8
15	12 43 0.66	3 15 39.1	.7446156	5 12.0	30	13 8 27.52	6 4 2.1	.7895773	2 36.5
16	12 43 24.17	3 18 23.5	.7458031	5 8.5	31	13 9 8.96	6 8 24.9	.7902909	2 33.3
17	12 43 48.18	3 21 11.0	.7469837	5 5.0	Sept. 1	13 9 50.67	6 12 49.0	.7909919	2 30.0
18	12 44 12.70	3 24 1.4	.7481572	5 1.4	2	13 10 32.65	6 17 14.2	.7916802	2 26.8
19	12 44 37.71	3 26 54.8	.7493235	4 57.9	3	13 11 14.89	6 21 40.5	.7923557	2 23.6
20	12 45 3.22	3 29 51.1	.7504822	4 54.4	4	13 11 57.38	6 26 8.0	.7930184	2 20.3
21	12 45 29.22	3 32 50.4	.7516332	4 50.9	5	13 12 40.13	6 30 36.5	.7936682	2 17.1
22	12 45 55.70	3 35 52.5	.7527763	4 47.4	6	13 13 23.12	6 35 6.0	.7943051	2 13.9
23	12 46 22.66	3 38 57.5	.7539113	4 43.9	7	13 14 6.36	6 39 36.5	.7949290	2 10.7
24	12 46 50.10	3 42 5.2	.7550379	4 40.5	8	13 14 49.83	6 44 8.0	.7955400	2 7.5
25	12 47 18.01	3 45 15.7	.7561559	4 37.0	9	13 15 33.54	6 48 40.4	.7961381	2 4.3
26	12 47 46.37	3 48 28.8	.7572651	4 33.5	10	13 16 17.48	6 53 13.7	.7967231	2 1.1
27	12 48 15.19	3 51 44.6	.7583654	4 30.1	11	13 17 1.64	6 57 47.8	.7972950	1 57.9
28	12 48 44.47	3 55 3.0	.7594566	4 26.6	12	13 17 46.03	7 2 22.7	.7978536	1 54.7
29	12 49 14.19	3 58 24.0	.7605386	4 23.2	13	13 18 30.64	7 6 58.4	.7983989	1 51.5
30	12 49 44.35	4 1 47.5	.7616111	4 19.8	14	13 19 15.47	7 11 34.8	.7989309	1 48.3
31	12 50 14.94	4 5 13.5	.7626741	4 16.3	15	13 20 0.50	7 16 12.0	.7994495	1 45.1
Aug. 1	12 50 45.95	4 8 41.9	.7637273	4 12.9	16	13 20 45.74	7 20 49.8	.7999547	1 41.9
2	12 51 17.39	4 12 12.7	.7647708	4 9.5	17	13 21 31.19	7 25 28.3	.8004464	1 38.8
3	12 51 49.23	4 15 45.8	.7658043	4 6.1	18	13 22 16.84	7 30 7.5	.8009246	1 35.6
4	12 52 21.48	4 19 21.2	.7668287	4 2.7	19	13 23 2.68	7 34 47.2	.8013891	1 32.4
5	12 52 54.14	4 22 58.9	.7678412	3 59.3	20	13 23 48.71	7 39 27.4	.8018399	1 29.3
6	12 53 27.19	4 26 38.8	.7688443	3 55.9	21	13 24 34.92	7 44 8.1	.8022769	1 26.1
7	12 54 0.64	4 30 20.8	.7698371	3 52.6	22	13 25 21.32	7 48 49.3	.8027000	1 22.9
8	12 54 34.47	4 34 5.0	.7708194	3 49.2	23	13 26 7.89	7 53 31.0	.8031092	1 19.8
9	12 55 8.69	4 37 51.3	.7717912	3 45.8	24	13 26 54.62	7 58 13.0	.8035045	1 16.6
10	12 55 43.28	4 41 39.6	.7727523	3 42.5	25	13 27 41.52	8 2 55.4	.8038858	1 13.5
11	12 56 18.25	4 45 30.0	.7737027	3 39.1	26	13 28 28.57	8 7 38.1	.8042531	1 10.3
12	12 56 53.59	4 49 22.4	.7746423	3 35.8	27	13 29 15.78	8 12 21.1	.8046064	1 7.2
13	12 57 29.29	4 53 16.8	.7755709	3 32.4	28	13 30 3.14	8 17 4.2	.8049457	1 4.0
14	12 58 5.35	4 57 13.0	.7764885	3 29.1	29	13 30 50.64	8 21 47.6	.8052710	1 0.9
15	12 58 41.77	5 1 11.1	.7773949	3 25.8	30	13 31 38.28	8 26 31.1	.8055823	0 57.7
16	12 59 18.54	5 5 11.0	.7782900	3 22.5	Oct. 1	13 32 26.06	8 31 14.8	.8058796	0 54.6
17	12 59 55.66	5 9 12.8	.7791738	3 19.2	2	13 33 13.97	8 35 58.5	.8061628	0 51.4
18	13 0 33.12	5 13 16.3	.7800461	3 15.8	3	13 34 2.01	8 40 42.3	.8064320	0 48.3
19	13 1 10.91	S. 5 17 21.5	0.7809067	3 12.5	4	13 34 50.17	S. 8 45 26.2	0.8066871	0 45.2

		Hor. Par.	Polar Semidiameter.			Hor. Par.	Polar Semidiameter.
July	20	1.56	16.32	September	8	1.41	14.72
	30	1.52	15.92		18	1.39	14.54
August	9	1.49	15.54		28	1.38	14.40
	19	1.46	15.22	October	8	1.37	14.32
	29	1.43	14.95		18	1.37	14.28

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Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Oct. 4	13 34 50.17	S. 8 45 20.2	0.8066871	0 45.2	Nov. 19	14 12 41.76	S. 12 14 41.1	0.8028157	22 18.8
5	13 35 38.45	8 50 10.1	0.8069281	0 42.0	20	14 13 30.54	12 18 51.6	0.8023884	22 15.7
6	13 36 26.84	8 54 54.0	0.8071550	0 38.9	21	14 14 19.21	12 23 0.7	0.8019466	22 12.6
7	13 37 15.34	8 59 37.8	0.8073678	0 35.8	22	14 15 7.77	12 27 8.4	0.8014902	22 9.5
8	13 38 3.95	9 4 21.6	0.8075664	0 32.7	23	14 15 56.20	12 31 14.5	0.8010193	22 6.3
9	13 38 52.67	9 9 5.2	0.8077509	0 29.5	24	14 16 44.49	12 35 19.1	0.8005339	22 3.2
10	13 39 41.48	9 13 48.6	0.8079211	0 26.4	25	14 17 32.65	12 39 22.1	0.8000342	22 0.1
11	13 40 30.39	9 18 31.9	0.8080771	0 23.3	26	14 18 20.67	12 43 23.6	0.7995200	21 56.9
12	13 41 19.39	9 23 15.0	0.8082188	0 20.2	27	14 19 8.54	12 47 23.6	0.7989916	21 53.8
13	13 42 8.48	9 27 57.8	0.8083462	0 17.0	28	14 19 56.26	12 51 21.9	0.7984488	21 50.7
14	13 42 57.65	9 32 40.4	0.8084591	0 13.9	29	14 20 43.82	12 55 18.6	0.7978918	21 47.5
15	13 43 46.90	9 37 22.7	0.8085576	0 10.8	30	14 21 31.22	12 59 13.7	0.7973205	21 44.4
16	13 44 36.23	9 42 4.6	0.8086417	0 7.7	Dec. 1	14 22 18.44	13 3 7.0	0.7967351	21 41.2
17	13 45 25.63	9 46 46.1	0.8087113	0 4.6	2	14 23 5.49	13 6 58.6	0.7961356	21 38.1
18	13 46 15.09	9 51 27.3	0.8087663	{ <sub>23</sub> 58.4}	3	14 23 52.36	13 10 48.5	0.7955221	21 34.9
19	13 47 4.61	9 56 8.0	0.8088067	23 55.3	4	14 24 39.05	13 14 36.7	0.7948945	21 31.7
20	13 47 54.19	10 0 48.3	0.8088325	23 52.2	5	14 25 25.54	13 18 23.1	0.7942530	21 28.6
21	13 48 43.82	10 5 28.0	0.8088437	23 49.0	6	14 26 11.84	13 22 7.7	0.7935974	21 25.4
22	13 49 33.48	10 10 7.2	0.8088403	23 45.9	7	14 26 57.94	13 25 50.5	0.7929278	21 22.2
23	13 50 23.18	10 14 45.8	0.8088222	23 42.8	8	14 27 43.82	13 29 31.5	0.7922444	21 19.1
24	13 51 12.92	10 19 23.9	0.8087895	23 39.7	9	14 28 29.49	13 33 10.5	0.7915470	21 15.9
25	13 52 2.68	10 24 1.3	0.8087421	23 36.6	10	14 29 14.94	13 36 47.7	0.7908358	21 12.7
26	13 52 52.47	10 28 38.0	0.8086800	23 33.5	11	14 30 0.15	13 40 22.9	0.7901108	21 9.5
27	13 53 42.27	10 33 14.0	0.8086033	23 30.4	12	14 30 45.13	13 43 56.2	0.7893720	21 6.3
28	13 54 32.09	10 37 49.3	0.8085120	23 27.3	13	14 31 29.87	13 47 27.6	0.7886194	21 3.1
29	13 55 21.91	10 42 23.7	0.8084062	23 24.2	14	14 32 14.36	13 50 57.0	0.7878531	20 59.9
30	13 56 11.74	10 46 57.4	0.8082858	23 21.1	15	14 32 58.59	13 54 24.4	0.7870731	20 56.7
31	13 57 1.56	10 51 30.3	0.8081509	23 18.0	16	14 33 42.56	13 57 49.7	0.7862795	20 53.5
Nov. 1	13 57 51.38	10 56 2.3	0.8080014	23 14.9	17	14 34 26.25	14 1 13.0	0.7854724	20 50.3
2	13 58 41.19	11 0 33.5	0.8078374	23 11.8	18	14 35 9.66	14 4 34.2	0.7846518	20 47.1
3	13 59 30.98	11 5 3.7	0.8076588	23 8.7	19	14 35 52.78	14 7 53.3	0.7838179	20 43.9
4	14 0 20.75	11 9 33.0	0.8074655	23 5.6	20	14 36 35.61	14 11 10.3	0.7829707	20 40.7
5	14 1 10.50	11 14 1.3	0.8072577	23 2.5	21	14 37 18.13	14 14 25.1	0.7821104	20 37.4
6	14 2 0.22	11 18 28.6	0.8070354	22 59.3	22	14 38 0.34	14 17 37.7	0.7812371	20 34.2
7	14 2 49.90	11 22 54.9	0.8067985	22 56.2	23	14 38 42.24	14 20 48.1	0.7803508	20 31.0
8	14 3 39.55	11 27 20.1	0.8065471	22 53.1	24	14 39 23.81	14 23 56.3	0.7794517	20 27.7
9	14 4 29.16	11 31 44.3	0.8062812	22 50.0	25	14 40 5.05	14 27 2.3	0.7785399	20 24.5
10	14 5 18.72	11 36 7.4	0.8060007	22 46.9	26	14 40 45.95	14 30 6.0	0.7776155	20 21.2
11	14 6 8.23	11 40 29.3	0.8057055	22 43.8	27	14 41 26.51	14 33 7.4	0.7766786	20 17.9
12	14 6 57.69	11 44 50.1	0.8053956	22 40.7	28	14 42 6.71	14 36 6.6	0.7757293	20 14.7
13	14 7 47.08	11 49 9.8	0.8050711	22 37.6	29	14 42 46.56	14 39 3.4	0.7747678	20 11.4
14	14 8 36.40	11 53 28.2	0.8047319	22 34.5	30	14 43 26.04	14 41 57.9	0.7737942	20 8.1
15	14 9 25.64	11 57 45.4	0.8043780	22 31.4	31	14 44 5.15	14 44 50.0	0.7728086	20 4.8
16	14 10 14.81	12 2 1.3	0.8040094	22 28.3	32	14 44 43.88	S. 14 47 39.8	0.7718110	20 1.5
17	14 11 3.89	12 6 15.9	0.8036262	22 25.1					
18	14 11 52.88	12 10 29.2	0.8032283	22 22.0					
19	14 12 41.76	S. 12 14 41.1	0.8028157	22 18.8					

		Hor. Par.	Polar Semidiameter.			Hor. Par.	Polar Semidiameter.
October	28	1.37	14.29	December	7	1.42	14.81
November	7	1.37	14.34		17	1.44	15.06
	17	1.38	14.44		27	1.47	15.37
	27	1.40	14.60		37	1.51	15.73

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Jan. 1	12 30 48.89	S. 0 46 53.2	0.9738105	17 46.6	Feb. 16	12 29 2.81	S. 0 21 56.1	0.9420005	14 43.7
2	12 30 55.37	0 47 16.4	.9730453	17 42.7	17	12 28 51.92	0 20 31.3	.9414794	14 39.6
3	12 31 1.47	0 47 37.1	.9722798	17 38.9	18	12 28 40.72	0 19 4.8	.9409695	14 35.5
4	12 31 7.18	0 47 55.2	.9715140	17 35.1	19	12 28 29.21	0 17 36.6	.9404711	14 31.4
5	12 31 12.49	0 48 10.7	.9707483	17 31.2	20	12 28 17.41	0 16 6.8	.9399845	14 27.3
6	12 31 17.41	0 48 23.6	.9699829	17 27.4	21	12 28 5.32	0 14 35.3	.9395098	14 23.1
7	12 31 21.93	0 48 34.0	.9692181	17 23.5	22	12 27 52.94	0 13 2.2	.9390474	14 19.0
8	12 31 26.06	0 48 41.8	.9684542	17 19.6	23	12 27 40.29	0 11 27.6	.9385973	14 14.8
9	12 31 29.80	0 48 47.1	.9676914	17 15.7	24	12 27 27.36	0 9 51.6	.9381599	14 10.7
10	12 31 33.14	0 48 49.8	.9669299	17 11.8	25	12 27 14.17	0 8 14.1	.9377354	14 6.5
11	12 31 36.08	0 48 50.0	.9661700	17 7.9	26	12 27 0.72	0 6 35.2	.9373239	14 2.4
12	12 31 38.62	0 48 47.6	.9654118	17 4.1	27	12 26 47.03	0 4 55.0	.9369257	13 58.2
13	12 31 40.77	0 48 42.7	.9646556	17 0.2	28	12 26 33.10	0 3 13.6	.9365409	13 54.0
14	12 31 42.52	0 48 35.2	.9639016	16 56.3	Mar. 1	12 26 18.94	S. 0 1 30.9	.9361698	13 49.9
15	12 31 43.87	0 48 25.2	.9631500	16 52.4	2	12 26 4.55	N. 0 0 12.9	.9358124	13 45.7
16	12 31 44.82	0 48 12.6	.9624012	16 48.4	3	12 25 49.94	0 1 57.8	.9354690	13 41.5
17	12 31 45.38	0 47 57.4	.9616553	16 44.5	4	12 25 35.13	0 3 43.7	.9351396	13 37.4
18	12 31 45.54	0 47 39.8	.9609126	16 40.6	5	12 25 20.12	0 5 30.6	.9348246	13 33.2
19	12 31 45.30	0 47 19.6	.9601735	16 36.6	6	12 25 4.91	0 7 18.4	.9345239	13 29.0
20	12 31 44.65	0 46 56.9	.9594381	16 32.7	7	12 24 49.53	0 9 7.1	.9342378	13 24.8
21	12 31 43.61	0 46 31.7	.9587067	16 28.7	8	12 24 33.97	0 10 56.5	.9339664	13 20.6
22	12 31 42.17	0 46 4.0	.9579796	16 24.8	9	12 24 18.25	0 12 46.7	.9337097	13 16.4
23	12 31 40.33	0 45 33.8	.9572570	16 20.8	10	12 24 2.37	0 14 37.6	.9334678	13 12.2
24	12 31 38.09	0 45 1.1	.9565392	16 16.8	11	12 23 46.34	0 16 29.1	.9332408	13 8.0
25	12 31 35.46	0 44 25.9	.9558265	16 12.8	12	12 23 30.18	0 18 21.2	.9330289	13 3.8
26	12 31 32.43	0 43 48.3	.9551193	16 8.9	13	12 23 13.89	0 20 13.8	.9328320	12 59.6
27	12 31 29.01	0 43 8.2	.9544178	16 4.9	14	12 22 57.47	0 22 6.8	.9326503	12 55.4
28	12 31 25.20	0 42 25.7	.9537223	16 0.9	15	12 22 40.94	0 24 0.2	.9324839	12 51.2
29	12 31 21.00	0 41 40.9	.9530331	15 56.9	16	12 22 24.31	0 25 53.9	.9323328	12 47.0
30	12 31 16.41	0 40 53.7	.9523504	15 52.9	17	12 22 7.58	0 27 47.9	.9321970	12 42.8
31	12 31 11.45	0 40 4.1	.9516746	15 48.8	18	12 21 50.76	0 29 42.2	.9320767	12 38.6
Feb. 1	12 31 6.10	0 39 12.2	.9510059	15 44.8	19	12 21 33.86	0 31 36.6	.9319720	12 34.3
2	12 31 0.37	0 38 18.0	.9503445	15 40.8	20	12 21 16.89	0 33 31.0	.9318829	12 30.1
3	12 30 54.27	0 37 21.6	.9496908	15 36.7	21	12 20 59.86	0 35 25.5	.9318095	12 25.9
4	12 30 47.80	0 36 22.9	.9490450	15 32.7	22	12 20 42.78	0 37 20.0	.9317518	12 21.7
5	12 30 40.96	0 35 22.0	.9484073	15 28.7	23	12 20 25.66	0 39 14.4	.9317100	12 17.5
6	12 30 33.76	0 34 19.0	.9477780	15 24.6	24	12 20 8.50	0 41 8.6	.9316839	12 13.3
7	12 30 26.20	0 33 13.8	.9471574	15 20.5	25	12 19 51.32	0 43 2.6	.9316736	12 9.1
8	12 30 18.29	0 32 6.5	.9465457	15 16.5	26	12 19 34.13	0 44 56.3	.9316791	12 4.8
9	12 30 10.03	0 30 57.1	.9459431	15 12.4	27	12 19 16.94	0 46 49.7	.9317004	12 0.6
10	12 30 1.43	0 29 45.7	.9453499	15 8.3	28	12 18 59.76	0 48 42.6	.9317375	11 56.4
11	12 29 52.48	0 28 32.2	.9447663	15 4.2	29	12 18 42.59	0 50 35.1	.9317903	11 52.2
12	12 29 43.21	0 27 16.8	.9441926	15 0.1	30	12 18 25.45	0 52 27.0	.9318588	11 48.0
13	12 29 33.60	0 25 59.5	.9436289	14 56.1	31	12 18 8.35	0 54 18.4	.9319431	11 43.8
14	12 29 23.66	0 24 40.2	.9430755	14 52.0	Apr. 1	12 17 51.29	0 56 9.0	.9320429	11 39.5
15	12 29 13.39	0 23 19.1	.9425326	14 47.9	2	12 17 34.29	0 57 58.9	.9321583	11 35.3
16	12 29 2.81	S. 0 21 56.1	0.9420005	14 43.7	3	12 17 17.36	N. 0 50 48.1	0.9322891	11 31.1

		Hor. Par.	Polar Semidiameter.			Hor. Par.	Polar Semidiameter.
January	1	0.94	7.92	February	20	1.01	8.56
	11	0.95	8.06	March	2	1.02	8.64
	21	0.97	8.21		12	1.03	8.70
	31	0.98	8.34		22	1.03	8.73
February	10	1.00	8.47	April	1	1.03	8.72

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Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Apr. 3	12 17 17.36	N. 0 59 48.1	0.9322891	11 31.1	May 19	12 7 43.78	N. 1 55 44.6	0.9525455	8 20.8
4	12 17 05.0	1 1 36.4	.9324353	11 26.9	20	12 7 38.08	1 56 8.2	.9532215	8 16.8
5	12 16 43.72	1 3 23.8	.9325968	11 22.7	21	12 7 32.73	1 56 29.4	.9539039	8 12.8
6	12 16 27.04	1 5 10.3	.9327735	11 18.5	22	12 7 27.74	1 56 48.2	.9545925	8 8.8
7	12 16 10.46	1 6 55.8	.9329652	11 14.3	23	12 7 23.12	1 57 4.4	.9552869	8 4.8
8	12 15 53.99	1 8 40.2	.9331719	11 10.1	24	12 7 18.86	1 57 18.2	.9559869	8 0.8
9	12 15 37.64	1 10 23.4	.9333934	11 5.9	25	12 7 14.96	1 57 29.5	.9566924	7 56.8
10	12 15 21.42	1 12 5.5	.9336296	11 1.7	26	12 7 11.43	1 57 38.3	.9574030	7 52.8
11	12 15 5.33	1 13 46.5	.9338804	10 57.5	27	12 7 8.27	1 57 44.7	.9581185	7 48.8
12	12 14 49.38	1 15 26.1	.9341456	10 53.3	28	12 7 5.48	1 57 48.6	.9588386	7 44.8
13	12 14 33.58	1 17 4.3	.9344252	10 49.1	29	12 7 3.05	1 57 49.9	.9595631	7 40.9
14	12 14 17.94	1 18 41.3	.9347190	10 44.9	30	12 7 1.00	1 57 48.8	.9602917	7 36.9
15	12 14 2.46	1 20 16.8	.9350269	10 40.7	31	12 6 59.32	1 57 45.2	.9610241	7 32.9
16	12 13 47.16	1 21 50.9	.9353487	10 36.5	June 1	12 6 58.02	1 57 39.1	.9617600	7 29.0
17	12 13 32.04	1 23 23.5	.9356843	10 32.4	2	12 6 57.09	1 57 30.5	.9624993	7 25.0
18	12 13 17.11	1 24 54.6	.9360335	10 28.2	3	12 6 56.53	1 57 19.5	.9632416	7 21.1
19	12 13 2.37	1 26 24.0	.9363962	10 24.0	4	12 6 56.35	1 57 5.9	.9639868	7 17.2
20	12 12 47.83	1 27 51.9	.9367722	10 19.9	5	12 6 56.54	1 56 49.9	.9647346	7 13.2
21	12 12 33.51	1 29 18.0	.9371614	10 15.7	6	12 6 57.10	1 56 31.4	.9654848	7 9.3
22	12 12 19.41	1 30 42.4	.9375636	10 11.5	7	12 6 58.03	1 56 10.5	.9662372	7 5.4
23	12 12 5.54	1 32 5.1	.9379786	10 7.3	8	12 6 59.33	1 55 47.2	.9669915	7 1.5
24	12 11 51.89	1 33 26.0	.9384063	10 3.2	9	12 7 1.00	1 55 21.5	.9677476	6 57.6
25	12 11 38.49	1 34 44.9	.9388464	9 59.0	10	12 7 3.04	1 54 53.3	.9685053	6 53.7
26	12 11 25.34	1 36 2.0	.9392987	9 54.9	11	12 7 5.45	1 54 22.7	.9692642	6 49.8
27	12 11 12.44	1 37 17.1	.9397631	9 50.8	12	12 7 8.23	1 53 49.7	.9700243	6 45.9
28	12 10 59.79	1 38 30.3	.9402392	9 46.6	13	12 7 11.37	1 53 14.3	.9707853	6 42.1
29	12 10 47.42	1 39 41.5	.9407269	9 42.5	14	12 7 14.88	1 52 36.5	.9715471	6 38.2
30	12 10 35.32	1 40 50.7	.9412260	9 38.3	15	12 7 18.76	1 51 56.3	.9723094	6 34.3
May 1	12 10 23.51	1 41 57.7	.9417362	9 34.2	16	12 7 23.01	1 51 13.8	.9730719	6 30.4
2	12 10 11.97	1 43 2.7	.9422573	9 30.1	17	12 7 27.62	1 50 28.9	.9738346	6 26.6
3	12 10 0.73	1 44 5.6	.9427890	9 26.0	18	12 7 32.60	1 49 41.6	.9745973	6 22.8
4	12 9 49.78	1 45 6.3	.9433310	9 21.9	19	12 7 37.93	1 48 52.0	.9753596	6 18.9
5	12 9 39.14	1 46 4.9	.9438832	9 17.8	20	12 7 43.63	1 48 0.1	.9761215	6 15.1
6	12 9 28.79	1 47 1.2	.9444453	9 13.7	21	12 7 49.69	1 47 5.9	.9768827	6 11.2
7	12 9 18.76	1 47 55.3	.9450170	9 9.6	22	12 7 56.11	1 46 9.3	.9776430	6 7.4
8	12 9 9.04	1 48 47.2	.9455982	9 5.5	23	12 8 2.89	1 45 10.5	.9784021	6 3.6
9	12 8 59.64	1 49 36.8	.9461885	9 1.4	24	12 8 10.03	1 44 9.5	.9791600	5 59.8
10	12 8 50.56	1 50 24.1	.9467878	8 57.3	25	12 8 17.52	1 43 6.2	.9799163	5 56.0
11	12 8 41.80	1 51 9.1	.9473959	8 53.2	26	12 8 25.37	1 42 0.6	.9806709	5 52.2
12	12 8 33.37	1 51 51.8	.9480123	8 49.1	27	12 8 33.56	1 40 52.9	.9814235	5 48.4
13	12 8 25.27	1 52 32.2	.9486370	8 45.1	28	12 8 42.11	1 39 42.9	.9821740	5 44.6
14	12 8 17.50	1 53 10.2	.9492697	8 41.0	29	12 8 51.00	1 38 30.7	.9829222	5 40.8
15	12 8 10.07	1 53 45.9	.9499102	8 37.0	30	12 9 0.24	1 37 16.4	.9836679	5 37.0
16	12 8 2.98	1 54 19.2	.9505582	8 32.9	July 1	12 9 9.82	1 35 59.9	.9844110	5 33.3
17	12 7 56.23	1 54 50.1	.9512136	8 28.9	2	12 9 19.73	1 34 41.3	.9851512	5 29.5
18	12 7 49.83	1 55 18.6	.9518761	8 24.9	3	12 9 29.98	1 33 20.6	.9858884	5 25.7
19	12 7 43.78	N. 1 55 44.6	0.9525455	8 20.8	4	12 9 40.57	N. 1 31 57.8	0.9866223	5 22.0

		Hor. Par.	Polar Semidiameter.			Hor. Par.	Polar Semidiameter.
April	11	1.03	8.69	May	31	0.96	8.16
	21	1.02	8.62	June	10	0.95	8.02
May	1	1.01	8.52		20	0.93	7.88
	11	0.99	8.41		30	0.91	7.75
	21	0.98	8.30	July	10	0.90	7.62

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
July 4	12 9 40.57	N. 1 31 57.8	0.9866223	5 22.0	Aug. 19	12 22 57.00	S. 0 2 39.1	1.0146109	2 34.4
5	12 9 51.48	1 30 33.0	.9873530	5 18.2	20	12 23 19.89	0 5 14.3	.0150516	2 30.8
6	12 10 2.72	1 29 6.1	.9880801	5 14.5	21	12 23 42.91	0 7 50.5	.0154838	2 27.3
7	12 10 14.28	1 27 37.2	.9888035	5 10.8	22	12 24 6.10	0 10 27.5	.0159072	2 23.7
8	12 10 26.17	1 26 6.4	.9895232	5 7.0	23	12 24 29.47	0 13 5.5	.0163219	2 20.2
9	12 10 38.37	1 24 33.6	.9902389	5 3.3	24	12 24 53.01	0 15 44.4	.0167277	2 16.6
10	12 10 50.89	1 22 58.8	.9909506	4 59.6	25	12 25 16.71	0 18 24.1	.0171245	2 13.1
11	12 11 3.73	1 21 22.1	.9916582	4 55.8	26	12 25 40.57	0 21 4.7	.0175124	2 9.6
12	12 11 16.87	1 19 43.5	.9923614	4 52.1	27	12 26 4.59	0 23 46.0	.0178913	2 6.0
13	12 11 30.32	1 18 2.9	.9930602	4 48.4	28	12 26 28.76	0 26 28.1	.0182611	2 2.5
14	12 11 44.08	1 16 20.5	.9937543	4 44.7	29	12 26 53.08	0 29 11.0	.0186218	1 59.0
15	12 11 58.14	1 14 36.3	.9944437	4 41.0	30	12 27 17.54	0 31 54.6	.0189734	1 55.4
16	12 12 12.51	1 12 50.2	.9951282	4 37.3	31	12 27 42.14	0 34 38.8	.0193158	1 51.9
17	12 12 27.17	1 11 2.3	.9958077	4 33.6	Sept. 1	12 28 6.88	0 37 23.7	.0196489	1 48.4
18	12 12 42.12	1 9 12.6	.9964820	4 30.0	2	12 28 31.75	0 40 9.2	.0199727	1 44.9
19	12 12 57.37	1 7 21.2	.9971510	4 26.3	3	12 28 56.76	0 42 55.3	.0202872	1 41.3
20	12 13 12.91	1 5 28.0	.9978146	4 22.6	4	12 29 21.89	0 45 42.0	.0205924	1 37.8
21	12 13 28.74	1 3 33.0	.9984726	4 19.0	5	12 29 47.14	0 48 29.3	.0208882	1 34.3
22	12 13 44.85	1 1 36.4	.9991249	4 15.3	6	12 30 12.52	0 51 17.1	.0211745	1 30.8
23	12 14 1.24	0 59 38.1	.9997714	4 11.6	7	12 30 38.01	0 54 5.5	.0214514	1 27.3
24	12 14 17.91	0 57 38.1	1.0004119	4 8.0	8	12 31 3.61	0 56 54.3	.0217187	1 23.8
25	12 14 34.85	0 55 36.5	.0010462	4 4.3	9	12 31 29.32	0 59 43.6	.0219765	1 20.3
26	12 14 52.06	0 53 33.3	.0016743	4 0.7	10	12 31 55.14	1 2 33.3	.0222246	1 16.8
27	12 15 9.54	0 51 28.5	.0022960	3 57.0	11	12 32 21.05	1 5 23.4	.0224631	1 13.3
28	12 15 27.29	0 49 22.1	.0029111	3 53.4	12	12 32 47.07	1 8 13.9	.0226919	1 9.8
29	12 15 45.30	0 47 14.2	.0035197	3 49.8	13	12 33 13.18	1 11 4.7	.0229110	1 6.3
30	12 16 3.56	0 45 4.9	.0041215	3 46.1	14	12 33 39.39	1 13 55.9	.0231203	1 2.8
31	12 16 22.07	0 42 54.0	.0047165	3 42.5	15	12 34 5.68	1 16 47.4	.0233199	0 59.3
Aug. 1	12 16 40.83	0 40 41.7	.0053046	3 38.9	16	12 34 32.06	1 19 39.2	.0235995	0 55.8
2	12 16 59.84	0 38 28.0	.0058856	3 35.3	17	12 34 58.52	1 22 31.3	.0236893	0 52.3
3	12 17 19.09	0 36 12.9	.0064596	3 31.7	18	12 35 25.06	1 25 23.6	.0238591	0 48.8
4	12 17 38.57	0 33 56.4	.0070264	3 28.1	19	12 35 51.67	1 28 16.1	.0240189	0 45.3
5	12 17 58.29	0 31 38.6	.0075859	3 24.5	20	12 36 18.34	1 31 8.8	.0241687	0 41.8
6	12 18 18.24	0 29 19.4	.0081381	3 20.9	21	12 36 45.08	1 34 1.6	.0243084	0 38.3
7	12 18 38.41	0 26 59.0	.0086828	3 17.3	22	12 37 11.88	1 36 54.6	.0244380	0 34.9
8	12 18 58.80	0 24 37.3	.0092201	3 13.7	23	12 37 38.74	1 39 47.6	.0245575	0 31.4
9	12 19 19.41	0 22 14.3	.0097498	3 10.1	24	12 38 5.65	1 42 40.7	.0246667	0 27.9
10	12 19 40.24	0 19 50.1	.0102718	3 6.5	25	12 38 32.60	1 45 33.8	.0247658	0 24.4
11	12 20 1.29	0 17 24.7	.0107860	3 2.9	26	12 38 59.60	1 48 27.0	.0248547	0 20.9
12	12 20 22.56	0 14 58.1	.0112924	2 59.3	27	12 39 26.63	1 51 20.1	.0249333	0 17.4
13	12 20 44.04	0 12 30.3	.0117909	2 55.8	28	12 39 53.70	1 54 13.1	.0250018	0 14.0
14	12 21 5.72	0 10 1.4	.0122813	2 52.2	29	12 40 20.80	1 57 6.1	.0250602	0 10.5
15	12 21 27.60	0 7 31.5	.0127637	2 48.6	30	12 40 47.93	1 59 59.0	.0251084	0 7.0
16	12 21 49.68	0 5 0.4	.0132380	2 45.1	Oct. 1	12 41 15.08	2 2 51.7	.0251464	0 3.5
17	12 22 11.95	N. 0 2 28.2	.0137040	2 41.5	2	12 41 42.25	2 5 44.3	.0251742	{ 0 0.0 23 58.5 }
18	12 22 34.41	S. 0 0 4.9	.0141617	2 37.9	3	12 42 9.43	2 8 36.7	.0251917	23 53.1
19	12 22 57.06	S. 0 2 39.1	1.0146109	2 34.4	4	12 42 36.63	S. 2 11 29.0	1.0251991	23 49.6

		Hor. Par.	Polar Semidiameter.			Hor. Par.	Polar Semidiameter.
July	20	0.88	7.49	September	8	0.84	7.09
	30	0.87	7.39		18	0.83	7.06
August	9	0.86	7.29		28	0.83	7.04
	19	0.85	7.21	October	8	0.83	7.03
	29	0.84	7.14		18	0.83	7.05

# SATURN, 1922.

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Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Oct. 4	12 42 36.63	S. 2 11 29.0	1.0251991	23 49.6	Nov. 19	13 2 30.56	S. 4 12 16.3	1.0146283	21 8.5
5	12 43 3.83	2 14 20.9	.0251962	23 46.1	20	13 2 53.68	4 14 29.3	.0141717	21 4.9
6	12 43 31.04	2 17 12.6	.0251832	23 42.6	21	13 3 16.61	4 16 40.9	.0137063	21 1.3
7	12 43 58.25	2 20 4.1	.0251600	23 39.2	22	13 3 39.34	4 18 50.9	.0132322	20 57.8
8	12 44 25.46	2 22 55.3	.0251267	23 35.7	23	13 4 1.87	4 20 59.4	.0127494	20 54.2
9	12 44 52.66	2 25 46.1	.0250832	23 32.2	24	13 4 24.20	4 23 6.4	.0122580	20 50.6
10	12 45 19.85	2 28 36.5	.0250294	23 28.7	25	13 4 46.31	4 25 11.8	.0117581	20 47.1
11	12 45 47.02	2 31 26.6	.0249654	23 25.3	26	13 5 8.21	4 27 15.7	.0112498	20 43.5
12	12 46 14.18	2 34 16.3	.0248912	23 21.8	27	13 5 29.89	4 29 17.9	.0107333	20 40.0
13	12 46 41.31	2 37 5.5	.0248066	23 18.3	28	13 5 51.35	4 31 18.5	.0102087	20 36.4
14	12 47 8.42	2 39 54.2	.0247118	23 14.8	29	13 6 12.59	4 33 17.5	.0096761	20 32.8
15	12 47 35.50	2 42 42.5	.0246067	23 11.3	30	13 6 33.59	4 35 14.8	.0091355	20 29.2
16	12 48 2.55	2 45 30.3	.0244913	23 7.8	Dec. 1	13 6 54.36	4 37 10.4	.0085871	20 25.6
17	12 48 29.56	2 48 17.6	.0243656	23 4.3	2	13 7 14.89	4 39 4.3	.0080308	20 22.0
18	12 48 56.52	2 51 4.2	.0242296	23 0.8	3	13 7 35.18	4 40 56.4	.0074669	20 18.4
19	12 49 23.44	2 53 50.3	.0240833	22 57.3	4	13 7 55.22	4 42 46.8	.0068954	20 14.8
20	12 49 50.30	2 56 35.8	.0239268	22 53.8	5	13 8 15.02	4 44 35.4	.0063164	20 11.2
21	12 50 17.11	2 59 20.6	.0237600	22 50.3	6	13 8 34.56	4 46 22.2	.0057300	20 7.6
22	12 50 43.86	3 2 4.7	.0235830	22 46.9	7	13 8 53.85	4 48 7.3	.0051364	20 4.0
23	12 51 10.54	3 4 48.1	.0233959	22 43.4	8	13 9 12.87	4 49 50.4	.0045356	20 0.3
24	12 51 37.15	3 7 30.8	.0231986	22 39.9	9	13 9 31.63	4 51 31.7	.0039277	19 56.7
25	12 52 3.68	3 10 12.7	.0229912	22 36.4	10	13 9 50.12	4 53 11.1	.0033129	19 53.1
26	12 52 30.13	3 12 53.7	.0227737	22 32.9	11	13 10 8.33	4 54 48.6	.0026913	19 49.5
27	12 52 56.50	3 15 34.0	.0225461	22 29.4	12	13 10 26.26	4 56 24.1	.0020630	19 45.8
28	12 53 22.79	3 18 13.5	.0223084	22 25.9	13	13 10 43.91	4 57 57.7	.0014281	19 42.2
29	12 53 48.98	3 20 52.0	.0220608	22 22.4	14	13 11 1.27	4 59 29.3	.0007867	19 38.5
30	12 54 15.07	3 23 29.7	.0218033	22 18.9	15	13 11 18.34	5 0 58.9	1.0001389	19 34.9
31	12 54 41.07	3 26 6.5	.0215359	22 15.4	16	13 11 35.11	5 2 26.5	0.9994850	19 31.2
Nov. 1	12 55 6.96	3 28 42.3	.0212586	22 11.9	17	13 11 51.57	5 3 52.1	.9988251	19 27.6
2	12 55 32.74	3 31 17.1	.0209715	22 8.4	18	13 12 7.73	5 5 15.6	.9981593	19 23.9
3	12 55 58.41	3 33 50.9	.0206747	22 4.9	19	13 12 23.58	5 6 37.0	.9974878	19 20.2
4	12 56 23.96	3 36 23.7	.0203681	22 1.4	20	13 12 39.12	5 7 56.4	.9968108	19 16.5
5	12 56 49.40	3 38 55.4	.0200518	21 57.9	21	13 12 54.34	5 9 13.6	.9961284	19 12.8
6	12 57 14.71	3 41 26.1	.0197259	21 54.4	22	13 13 9.24	5 10 28.7	.9954408	19 9.2
7	12 57 39.89	3 43 55.7	.0193904	21 50.9	23	13 13 23.81	5 11 41.6	.9947482	19 5.5
8	12 58 4.94	3 46 24.2	.0190453	21 47.3	24	13 13 38.06	5 12 52.4	.9940508	19 1.8
9	12 58 29.86	3 48 51.6	.0186907	21 43.8	25	13 13 51.97	5 14 0.9	.9933487	18 58.1
10	12 58 54.64	3 51 17.7	.0183265	21 40.3	26	13 14 5.55	5 15 7.3	.9926421	18 54.4
11	12 59 19.27	3 53 42.7	.0179529	21 36.7	27	13 14 18.79	5 16 11.5	.9919312	18 50.6
12	12 59 43.75	3 56 6.5	.0175698	21 33.2	28	13 14 31.69	5 17 13.4	.9912162	18 46.9
13	13 0 8.08	3 58 29.0	.0171774	21 29.7	29	13 14 44.24	5 18 13.1	.9904972	18 43.2
14	13 0 32.25	4 0 50.2	.0167756	21 26.2	30	13 14 56.45	5 19 10.6	.9897744	18 39.5
15	13 0 56.26	4 3 10.1	.0163645	21 22.6	31	13 15 8.32	5 20 5.8	.9890481	18 35.7
16	13 1 20.10	4 5 28.7	.0159441	21 19.1	32	13 15 19.83	S. 5 20 58.7	0.9883183	18 32.0
17	13 1 43.77	4 7 46.0	.0155146	21 15.6					
18	13 2 7.26	4 10 1.9	.0150760	21 12.0					
19	13 2 30.56	S. 4 12 16.3	1.0146283	21 8.5					

		Hor. Par.	Polar Semidiameter.			Hor. Par.	Polar Semidiameter.
October	28	0.84	7.08	December	7	0.87	7.37
November	7	0.84	7.13		17	0.88	7.47
	17	0.85	7.19		27	0.90	7.59
	27	0.86	7.27		37	0.91	7.73

Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Jun. 1	22 34 37.16	S. 9 46 42.3	1.3139301	3 52.6	July 4	23 0 24.68	S. 7 13 8.9	1.2918145	16 10.9
5	22 35 11.96	9 43 9.1	3151173	3 37.4	8	23 0 12.54	7 14 33.3	2905333	15 54.9
9	22 35 49.00	9 39 22.9	3162413	3 22.3	12	22 59 57.77	7 16 13.8	2893031	15 38.9
13	22 36 28.12	9 35 24.5	3172981	3 7.2	16	22 59 40.47	7 18 9.5	2881294	15 22.9
17	22 37 9.19	9 31 14.7	3182840	2 52.2	20	22 59 20.73	7 20 19.8	2870183	15 6.9
21	22 37 52.04	9 26 54.4	3191954	2 37.2	24	22 58 58.66	7 22 44.0	2859768	14 50.8
25	22 38 36.55	9 22 24.4	3200285	2 22.2	28	22 58 34.40	7 25 21.1	2850107	14 34.6
29	22 39 22.56	9 17 45.7	3207800	2 7.2	Aug. 1	22 58 8.12	7 28 10.0	2841257	14 18.5
Feb. 2	22 40 9.86	9 12 59.2	3214467	1 52.3	5	22 57 39.99	7 31 9.6	2833268	14 2.3
6	22 40 58.30	9 8 6.1	3220265	1 37.4	9	22 57 10.19	7 34 18.8	2826177	13 46.0
10	22 41 47.70	9 3 7.4	3225181	1 22.5	13	22 56 38.88	7 37 36.4	2820027	13 29.8
14	22 42 37.87	8 58 3.9	3229202	1 7.6	17	22 56 6.29	7 41 1.0	2814859	13 13.5
18	22 43 28.67	8 52 56.9	3232316	0 52.7	21	22 55 32.58	7 44 31.6	2810703	12 57.2
22	22 44 19.92	8 47 47.2	3234512	0 37.8	25	22 54 57.99	7 48 6.6	2807599	12 40.9
26	22 45 11.47	8 42 35.8	3235777	0 22.9	29	22 54 22.76	7 51 44.6	2805563	12 24.6
Mar. 2	22 46 3.11	8 37 23.9	3236113	0 8.1	Sept. 2	22 53 47.13	7 55 23.9	2804608	12 8.3
6	22 46 54.66	8 32 12.7	3235522	23 49.5	6	22 53 11.33	7 59 3.3	2804738	11 52.0
10	22 47 45.95	8 27 3.0	3234008	23 34.6	10	22 52 35.60	8 2 41.4	2805959	11 35.7
14	22 48 36.82	8 21 56.0	3231587	23 19.7	14	22 52 0.15	8 6 16.6	2808256	11 19.4
18	22 49 27.12	8 16 52.6	3228274	23 4.8	18	22 51 25.22	8 9 47.6	2811639	11 3.1
22	22 50 16.68	8 11 53.8	3224072	22 49.9	22	22 50 51.06	8 13 12.8	2816086	10 46.8
26	22 51 5.35	8 7 0.5	3219000	22 35.0	26	22 50 17.92	8 16 30.9	2821575	10 30.5
30	22 51 52.96	8 2 13.9	3213077	22 20.0	30	22 49 46.03	8 19 40.5	2828073	10 14.2
Apr. 3	22 52 39.33	7 57 34.9	3206327	22 5.1	Oct. 4	22 49 15.60	8 22 40.3	2835537	9 58.0
7	22 53 24.33	7 53 4.5	3198779	21 50.1	8	22 48 46.84	8 25 29.2	2843930	9 41.8
11	22 54 7.81	7 48 43.5	3190471	21 35.1	12	22 48 19.92	8 28 6.1	2853206	9 25.6
15	22 54 49.65	7 44 32.8	3181432	21 20.1	16	22 47 55.03	8 30 29.8	2863322	9 9.5
19	22 55 29.72	7 40 33.1	3171695	21 5.0	20	22 47 32.37	8 32 39.5	2874221	8 53.4
23	22 56 7.89	7 36 45.4	3161289	20 49.9	24	22 47 12.09	8 34 34.1	2885844	8 37.3
27	22 56 44.01	7 33 10.4	3150261	20 34.7	28	22 46 54.36	8 36 12.6	2898123	8 21.3
May 1	22 57 17.98	7 29 48.9	3138649	20 19.5	Nov. 1	22 46 39.30	8 37 34.8	2910985	8 5.3
5	22 57 49.66	7 26 41.8	3126509	20 4.3	5	22 46 27.00	8 38 39.8	2924366	7 49.4
9	22 58 18.97	7 23 49.3	3113888	19 49.1	9	22 46 17.55	8 39 27.2	2938193	7 33.5
13	22 58 45.83	7 21 12.3	3100837	19 33.8	13	22 46 11.03	8 39 56.6	2952399	7 17.7
17	22 59 10.15	7 18 51.1	3087405	19 18.5	17	22 46 7.52	8 40 7.7	2966917	7 1.9
21	22 59 31.86	7 16 46.3	3073637	19 3.1	21	22 46 7.06	8 40 0.2	2981665	6 46.2
25	22 59 50.85	7 14 58.4	3059600	18 47.7	25	22 46 9.69	8 39 33.9	2996565	6 30.5
29	23 0 7.09	7 13 27.7	3045354	18 32.2	29	22 46 15.40	8 38 49.0	3011542	6 14.9
June 2	23 0 20.51	7 12 14.6	3030957	18 16.7	Dec. 3	22 46 24.20	8 37 45.5	3026520	5 59.3
6	23 0 31.08	7 11 19.2	3016479	18 1.1	7	22 46 36.04	8 36 23.7	3041426	5 43.8
10	23 0 38.78	7 10 41.6	3001981	17 45.5	11	22 46 50.86	8 34 43.8	3056209	5 28.3
14	23 0 43.61	7 10 21.9	2987522	17 29.8	15	22 47 8.66	8 32 46.0	3070790	5 12.9
18	23 0 45.56	7 10 20.0	2973168	17 14.1	19	22 47 29.38	8 30 30.8	3085098	4 57.5
22	23 0 44.61	7 10 36.0	2958981	16 58.4	23	22 47 52.92	8 27 58.6	3099068	4 42.2
26	23 0 40.78	7 11 9.8	2945034	16 42.6	27	22 48 19.20	8 25 10.0	3112636	4 26.9
30	23 0 34.12	7 12 0.8	2931398	16 26.8	31	22 48 48.11	S. 8 22 5.6	3125743	4 11.6
July 4	23 0 24.68	S. 7 13 8.9	1.2918145	16 10.9					



# NEPTUNE, 1922.

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Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.	Mean Noon.	Apparent Right Ascension.	Apparent Declination.	Log. of True Dist. from the Earth.	Merid. Passage.
	h m s	° ' "		h m		h m s	° ' "		h m
Jan. 1	9 11 51.38	N. 16 18 33.5	1.4663418	14 28.0	July 4	9 7 47.48	N. 16 38 11.3	1.4903518	2 20.6
5	9 11 29.98	16 20 12.3	.4657798	14 11.9	8	9 8 18.86	16 35 56.3	.4908363	2 5.4
9	9 11 7.33	16 21 56.1	.4652806	13 55.8	12	9 8 51.14	16 33 37.0	.4912667	1 50.2
13	9 10 43.60	16 23 44.7	.4648469	13 39.7	16	9 9 24.22	16 31 13.9	.4916419	1 35.0
17	9 10 18.93	16 25 37.1	.4644813	13 23.6	20	9 9 58.00	16 28 47.3	.4919596	1 19.8
21	9 9 53.47	16 27 32.8	.4641855	13 7.4	24	9 10 32.36	16 26 17.9	.4922181	1 4.7
25	9 9 27.38	16 29 31.0	.4639617	12 51.2	28	9 11 7.17	16 23 46.2	.4924177	0 49.5
29	9 9 0.84	16 31 30.8	.4638111	12 35.1	Aug. 1	9 11 42.32	16 21 12.6	.4925566	0 34.4
Feb. 2	9 8 34.02	16 33 31.4	.4637348	12 18.9	5	9 12 17.66	16 18 37.8	.4926338	0 19.2
6	9 8 7.13	16 35 32.1	.4637336	12 2.7	9	9 12 53.12	16 16 2.0	.4926496	10 4.1
10	9 7 40.31	16 37 32.2	.4638054	11 46.6	13	9 13 28.56	16 13 26.1	.4926055	23 45.2
14	9 7 13.78	16 39 30.7	.4639510	11 30.4	17	9 14 3.85	16 10 50.4	.4924993	23 30.0
18	9 6 47.65	16 41 27.1	.4641690	11 14.2	21	9 14 38.90	16 8 15.4	.4923317	23 14.9
22	9 6 22.12	16 43 20.7	.4644577	10 58.1	25	9 15 13.57	16 5 41.9	.4921032	22 59.7
26	9 5 57.34	16 45 10.6	.4648163	10 42.0	29	9 15 47.72	16 3 10.4	.4918146	22 44.6
Mar. 2	9 5 33.48	16 46 56.2	.4652421	10 25.8	Sept. 2	9 16 21.25	16 0 41.4	.4914665	22 29.4
6	9 5 10.71	16 48 36.8	.4657326	10 9.7	6	9 16 54.03	15 58 15.4	.4910608	22 14.2
10	9 4 49.15	16 50 12.0	.4662842	9 53.7	10	9 17 25.96	15 55 53.0	.4905991	21 59.0
14	9 4 28.97	16 51 41.1	.4668932	9 37.6	14	9 17 56.93	15 53 34.8	.4900822	21 43.8
18	9 4 10.24	16 53 3.6	.4675568	9 21.5	18	9 18 26.84	15 51 21.2	.4895122	21 28.5
22	9 3 53.09	16 54 19.3	.4682214	9 5.5	22	9 18 55.55	15 49 12.8	.4888903	21 13.3
26	9 3 37.63	16 55 27.5	.4690328	8 49.6	26	9 19 22.96	15 47 10.3	.4882196	20 58.0
30	9 3 23.96	16 56 27.9	.4698373	8 33.6	30	9 19 48.96	15 45 14.1	.4875027	20 42.7
Apr. 3	9 3 12.18	16 57 20.1	.4706799	8 17.7	Oct. 4	9 20 13.46	15 43 24.6	.4867423	20 27.4
7	9 3 2.34	16 58 3.9	.4715556	8 1.8	8	9 20 36.37	15 41 42.3	.4859418	20 12.0
11	9 2 54.51	16 58 39.1	.4724600	7 46.0	12	9 20 57.61	15 40 7.6	.4851040	19 56.6
15	9 2 48.71	16 59 5.6	.4733886	7 30.1	16	9 21 17.10	15 38 41.2	.4842320	19 41.2
19	9 2 44.98	16 59 23.2	.4743371	7 14.3	20	9 21 34.74	15 37 23.0	.4833292	19 25.8
23	9 2 43.37	16 59 31.7	.4753009	6 58.6	24	9 21 50.47	15 36 13.8	.4824000	19 10.3
27	9 2 43.88	16 59 31.2	.4762754	6 42.9	28	9 22 4.20	15 35 14.0	.4814484	18 54.8
May 1	9 2 46.53	16 59 21.5	.4772555	6 27.2	Nov. 1	9 22 15.91	15 34 23.4	.4804791	18 39.3
5	9 2 51.31	16 59 2.8	.4782365	6 11.6	5	9 22 25.54	15 33 42.5	.4794964	18 23.7
9	9 2 58.20	16 58 35.0	.4792137	5 56.0	9	9 22 33.07	15 33 11.6	.4785043	18 8.1
13	9 3 7.15	16 57 58.4	.4801830	5 40.4	13	9 22 38.45	15 32 50.6	.4775074	17 52.4
17	9 3 18.14	16 57 13.1	.4811404	5 24.8	17	9 22 41.66	15 32 39.8	.4765107	17 36.8
21	9 3 31.13	16 56 19.2	.4820823	5 9.3	21	9 22 42.70	15 32 39.2	.4755189	17 21.1
25	9 3 46.11	16 55 16.9	.4830035	4 53.8	25	9 22 41.56	15 32 48.7	.4745378	17 5.3
29	9 4 2.95	16 54 6.2	.4839017	4 38.4	29	9 22 38.26	15 33 8.3	.4735720	16 49.5
June 2	9 4 21.64	16 52 47.7	.4847711	4 23.0	Dec. 3	9 22 32.83	15 33 37.9	.4726269	16 33.7
6	9 4 42.10	16 51 21.4	.4856100	4 7.6	7	9 22 25.33	15 34 17.1	.4717069	16 17.8
10	9 5 4.23	16 49 48.0	.4864138	3 52.2	11	9 22 15.79	15 35 5.8	.4708165	16 1.9
14	9 5 27.95	16 48 7.5	.4871801	3 36.9	15	9 22 4.27	15 36 3.7	.4699605	15 46.0
18	9 5 53.19	16 46 20.1	.4879062	3 21.6	19	9 21 50.83	15 37 10.4	.4691446	15 30.1
22	9 6 19.87	16 44 26.6	.4885892	3 6.3	23	9 21 35.57	15 38 25.5	.4683731	15 14.1
26	9 6 47.87	16 42 27.0	.4892262	2 51.0	27	9 21 18.59	15 39 48.4	.4676503	14 58.1
30	9 7 17.12	16 40 21.6	.4898140	2 35.8	31	9 21 0.01	N. 15 41 18.6	1.4669804	14 42.0
July 4	9 7 47.48	N. 16 38 11.3	1.4903518	2 20.6					

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semid. pass. Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass. Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Jan. 1	18 9 48.30	0.36	S. 23 31 44.8	5.01	5.24	Feb. 16	22 5 48.94	0.34	S. 13 11 45.0	4.90	5.13
2	18 15 18.06	0.36	23 32 31.7	5.00	5.23	17	22 10 38.62	0.34	12 45 51.7	4.90	5.13
3	18 20 47.84	0.36	23 32 34.7	5.00	5.23	18	22 15 27.22	0.33	12 19 37.7	4.90	5.13
4	18 26 17.58	0.36	23 31 53.8	4.99	5.22	19	22 20 14.78	0.33	11 53 4.0	4.90	5.13
5	18 31 47.21	0.36	23 30 29.0	4.99	5.22	20	22 25 1.32	0.33	11 26 11.1	4.91	5.14
6	18 37 16.68	0.36	23 28 20.5	4.98	5.21	21	22 29 46.87	0.33	10 59 0.0	4.91	5.14
7	18 42 45.91	0.36	S. 23 25 28.2	4.98	5.21	22	22 34 31.44	0.33	S. 10 31 31.3	4.91	5.14
8	18 48 14.84	0.36	23 21 52.2	4.97	5.20	23	22 39 15.08	0.33	10 3 45.9	4.91	5.14
9	18 53 43.42	0.36	23 17 32.7	4.97	5.20	24	22 43 57.81	0.33	9 35 44.5	4.91	5.14
10	18 59 11.60	0.36	23 12 30.0	4.96	5.19	25	22 48 39.67	0.33	9 7 27.9	4.91	5.14
11	19 4 39.29	0.36	23 6 44.1	4.96	5.19	26	22 53 20.68	0.33	8 38 56.9	4.91	5.14
12	19 10 6.46	0.36	23 0 15.4	4.96	5.19	27	22 58 0.88	0.33	8 10 12.2	4.92	5.15
13	19 15 33.05	0.36	S. 22 53 4.0	4.95	5.18	28	23 2 40.31	0.33	S. 7 41 14.6	4.92	5.15
14	19 20 59.02	0.36	22 45 10.4	4.95	5.18	Mar. 1	23 7 18.99	0.33	7 12 4.9	4.92	5.15
15	19 26 24.30	0.36	22 36 34.8	4.95	5.18	2	23 11 56.97	0.33	6 42 43.9	4.92	5.15
16	19 31 48.85	0.36	22 27 17.6	4.94	5.17	3	23 16 34.27	0.33	6 13 12.2	4.92	5.15
17	19 37 12.64	0.36	22 17 19.1	4.94	5.17	4	23 21 10.95	0.33	5 43 30.7	4.93	5.16
18	19 42 35.60	0.36	22 6 39.9	4.94	5.17	5	23 25 47.03	0.33	5 13 40.2	4.93	5.16
19	19 47 57.69	0.35	S. 21 55 20.3	4.93	5.16	6	23 30 22.55	0.33	S. 4 43 41.3	4.93	5.16
20	19 53 18.87	0.35	21 43 20.8	4.93	5.16	7	23 34 57.56	0.33	4 13 34.8	4.94	5.17
21	19 58 39.10	0.35	21 30 41.8	4.93	5.16	8	23 39 32.10	0.33	3 43 21.5	4.94	5.17
22	20 3 58.35	0.35	21 17 24.0	4.93	5.16	9	23 44 6.21	0.33	3 13 2.1	4.94	5.17
23	20 9 16.57	0.35	21 3 27.9	4.92	5.15	10	23 48 39.92	0.33	2 42 37.4	4.95	5.18
24	20 14 33.73	0.35	20 48 54.1	4.92	5.15	11	23 53 13.28	0.33	2 12 7.9	4.95	5.18
25	20 19 49.80	0.35	S. 20 33 43.1	4.92	5.15	12	23 57 46.34	0.33	S. 1 41 34.6	4.95	5.18
26	20 25 4.76	0.35	20 17 55.6	4.92	5.15	13	0 2 19.13	0.33	1 10 58.1	4.96	5.19
27	20 30 18.56	0.35	20 1 32.2	4.92	5.15	14	0 6 51.71	0.33	0 40 19.2	4.96	5.19
28	20 35 31.20	0.35	19 44 33.5	4.91	5.14	15	0 11 24.13	0.33	S. 0 9 38.6	4.96	5.19
29	20 40 42.65	0.35	19 27 0.2	4.91	5.14	16	0 15 56.42	0.33	N. 0 21 3.1	4.97	5.20
30	20 45 52.90	0.35	19 8 52.9	4.91	5.14	17	0 20 28.63	0.33	0 51 45.0	4.97	5.20
31	20 51 1.91	0.35	S. 18 50 12.4	4.91	5.14	18	0 25 0.81	0.33	N. 1 22 26.5	4.98	5.21
Feb. 1	20 56 9.69	0.35	18 30 59.3	4.91	5.14	19	0 29 33.00	0.33	1 53 6.8	4.98	5.21
2	21 1 16.24	0.34	18 11 14.3	4.91	5.14	20	0 34 5.24	0.33	2 23 45.4	4.99	5.22
3	21 6 21.53	0.34	17 50 58.2	4.91	5.14	21	0 38 37.58	0.33	2 54 21.3	4.99	5.22
4	21 11 25.57	0.34	17 30 11.7	4.91	5.14	22	0 43 10.06	0.33	3 24 53.8	5.00	5.23
5	21 16 28.36	0.34	17 8 55.5	4.91	5.14	23	0 47 42.72	0.33	3 55 22.3	5.00	5.23
6	21 21 29.88	0.34	S. 16 47 10.4	4.90	5.13	24	0 52 15.60	0.33	N. 4 25 45.9	5.01	5.24
7	* * *	*	* * *	*	*	25	0 56 48.76	0.33	4 56 3.9	5.01	5.24
8	21 26 30.16	0.34	16 24 57.0	4.90	5.13	26	1 1 22.21	0.34	5 26 15.7	5.02	5.25
9	21 31 29.21	0.34	16 2 16.2	4.90	5.13	27	1 5 56.00	0.34	5 56 20.4	5.03	5.26
10	21 36 27.02	0.34	15 39 8.7	4.90	5.13	28	1 10 30.18	0.34	6 26 17.3	5.03	5.26
11	21 41 23.62	0.34	15 15 35.3	4.90	5.13	29	1 15 4.78	0.34	6 56 5.7	5.04	5.27
12	21 46 19.01	0.34	S. 14 51 36.6	4.90	5.13	30	1 19 39.84	0.34	N. 7 25 44.7	5.04	5.27
13	21 51 13.22	0.34	14 27 13.4	4.90	5.13	31	1 24 15.39	0.34	7 55 13.8	5.05	5.28
14	21 56 6.26	0.34	14 2 26.6	4.90	5.13	Apr. 1	1 28 51.48	0.34	8 24 32.1	5.05	5.28
15	22 0 58.16	0.34	S. 13 37 16.9	4.90	5.13	2	1 33 28.14	0.34	N. 8 53 38.9	5.06	5.29

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semid. pass <sup>g</sup> Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass <sup>g</sup> Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Apr. 3	1 38 5.40	0.34	N. 9 22 33.4	5.07	5.30	May 19	5 27 19.36	0.41	N. 21 20 32.8	5.61	5.87
4	1 42 43.30	0.34	9 51 14.8	5.07	5.31	20	5 32 38.34	0.41	24 26 32.9	5.63	5.89
5	1 47 21.87	0.34	10 19 42.6	5.08	5.32	21	5 37 57.65	0.41	24 31 50.5	5.65	5.91
6	1 52 1.14	0.34	10 47 55.8	5.08	5.32	22	5 43 17.22	0.42	24 36 25.5	5.67	5.93
7	1 56 41.14	0.35	11 15 53.7	5.09	5.33	23	5 48 37.00	0.42	24 40 17.7	5.69	5.95
8	2 1 21.92	0.35	11 43 35.6	5.10	5.34	24	5 53 56.92	0.42	24 43 27.0	5.71	5.97
9	2 6 3.50	0.35	N. 12 11 0.7	5.11	5.35	25	5 59 16.93	0.42	N. 24 45 53.1	5.72	5.99
10	2 10 45.91	0.35	12 38 8.4	5.12	5.36	26	6 4 36.94	0.42	24 47 36.2	5.74	6.01
11	2 15 29.19	0.35	13 4 57.8	5.13	5.37	27	6 9 56.90	0.42	24 48 36.0	5.76	6.03
12	2 20 13.36	0.35	13 31 28.2	5.13	5.37	28	6 15 16.74	0.42	24 48 52.6	5.78	6.05
13	2 24 58.45	0.35	13 57 38.8	5.14	5.38	29	6 20 36.40	0.43	24 48 26.0	5.81	6.08
14	2 29 44.50	0.35	14 23 29.0	5.15	5.39	30	6 25 55.80	0.43	24 47 16.1	5.83	6.10
15	2 34 31.52	0.36	N. 14 48 57.9	5.16	5.40	31	6 31 14.88	0.43	N. 24 45 23.2	5.85	6.12
16	2 39 19.55	0.36	15 14 4.9	5.17	5.41	June 1	6 36 33.57	0.43	24 42 47.2	5.87	6.14
17	2 44 8.59	0.36	15 38 49.2	5.18	5.42	2	6 41 51.80	0.43	24 39 28.4	5.90	6.17
18	2 48 58.67	0.36	16 3 9.9	5.19	5.43	3	6 47 9.52	0.43	24 35 26.9	5.92	6.19
19	2 53 49.82	0.36	16 27 6.5	5.20	5.44	4	6 52 26.65	0.44	24 30 43.0	5.94	6.22
20	2 58 42.03	0.36	16 50 38.2	5.21	5.45	5	6 57 43.13	0.44	24 25 16.7	5.96	6.24
21	3 3 35.33	0.36	N. 17 13 44.2	5.22	5.46	6	7 2 58.92	0.44	N. 24 19 8.5	5.99	6.27
22	3 8 29.73	0.37	17 36 23.7	5.24	5.48	7	7 8 13.94	0.44	24 12 18.5	6.01	6.29
23	3 13 25.23	0.37	17 58 36.1	5.25	5.49	8	7 13 28.15	0.44	24 4 47.1	6.04	6.32
24	3 18 21.84	0.37	18 20 20.6	5.26	5.50	9	7 18 41.49	0.44	23 56 34.7	6.06	6.34
25	3 23 19.56	0.37	18 41 36.5	5.27	5.51	10	7 23 53.91	0.44	23 47 41.7	6.09	6.37
26	3 28 18.39	0.37	19 2 23.1	5.28	5.52	11	7 29 5.36	0.45	23 38 8.3	6.12	6.40
27	3 33 18.32	0.37	N. 19 22 39.5	5.29	5.53	12	7 34 15.80	0.45	N. 23 27 55.0	6.14	6.42
28	3 38 19.36	0.38	19 42 25.3	5.30	5.55	13	7 39 25.20	0.45	23 17 2.3	6.16	6.45
29	3 43 21.49	0.38	20 1 39.6	5.31	5.56	14	7 44 33.50	0.45	23 5 30.7	6.19	6.48
30	3 48 24.71	0.38	20 20 21.7	5.31	5.56	15	7 49 40.66	0.45	22 53 20.6	6.22	6.51
May 1	3 53 28.99	0.38	20 38 31.1	5.32	5.57	16	7 54 46.65	0.45	22 40 32.5	6.25	6.54
2	3 58 34.32	0.38	20 56 6.9	5.34	5.59	17	7 59 51.43	0.45	22 27 7.1	6.28	6.57
3	4 3 40.68	0.38	N. 21 13 8.6	5.35	5.60	18	8 4 54.97	0.45	N. 22 13 4.7	6.31	6.60
4	4 8 48.05	0.38	21 29 35.6	5.36	5.61	19	8 9 57.24	0.46	21 58 26.0	6.34	6.63
5	4 13 56.42	0.39	21 45 27.1	5.38	5.63	20	8 14 58.20	0.46	21 43 11.6	6.36	6.66
6	4 19 5.74	0.39	22 0 42.7	5.41	5.66	21	8 19 57.85	0.46	21 27 22.0	6.39	6.69
7	4 24 16.01	0.39	22 15 21.8	5.42	5.67	22	8 24 56.14	0.46	21 10 57.9	6.43	6.73
8	4 29 27.18	0.39	22 29 23.7	5.44	5.69	23	8 29 53.05	0.46	20 54 0.0	6.46	6.76
9	4 34 39.22	0.39	N. 22 42 47.9	5.45	5.70	24	8 34 48.57	0.46	N. 20 36 28.8	6.49	6.79
10	4 39 52.11	0.40	22 55 33.9	5.47	5.72	25	8 39 42.68	0.46	20 18 25.0	6.53	6.83
11	4 45 5.81	0.40	23 7 41.2	5.48	5.73	26	8 44 35.36	0.47	19 59 49.2	6.56	6.86
12	4 50 20.27	0.40	23 19 9.3	5.50	5.75	27	8 49 26.59	0.47	19 40 42.3	6.59	6.90
13	4 55 35.45	0.40	23 29 57.8	5.51	5.77	28	8 54 16.36	0.47	19 21 4.9	6.62	6.93
14	5 0 51.32	0.40	23 40 6.1	5.52	5.78	29	8 59 4.65	0.47	19 0 57.7	6.66	6.97
15	5 6 7.84	0.40	N. 23 49 34.0	5.54	5.80	30	9 3 51.47	0.47	N. 18 40 21.3	6.70	7.01
16	5 11 24.95	0.41	23 58 20.9	5.56	5.82	July 1	9 8 36.80	0.47	18 19 16.4	6.73	7.04
17	5 16 42.61	0.41	24 6 26.5	5.58	5.84	2	9 13 20.64	0.47	17 57 43.8	6.77	7.08
18	5 22 0.76	0.41	N. 24 13 50.6	5.60	5.86	3	9 18 2.99	0.48	N. 17 35 44.2	6.80	7.12

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
July 4	9 22 43.85	0.48	N. 17 13 18.3	6.84	7.16	Aug. 19	12 36 37.15	0.63	S. 4 31 28.4	9.46	9.90
5	9 27 23.23	0.48	16 50 26.9	6.88	7.20	20	12 40 31.30	0.64	5 1 36.4	9.54	9.98
6	9 32 1.12	0.48	16 27 10.7	6.92	7.24	21	12 44 25.03	0.64	5 31 38.8	9.62	10.07
7	9 36 37.55	0.48	16 3 30.3	6.96	7.28	22	12 48 18.37	0.65	6 1 35.2	9.71	10.16
8	9 41 12.51	0.48	15 39 26.5	7.00	7.32	23	12 52 11.33	0.66	6 31 24.8	9.81	10.26
9	9 45 46.03	0.49	15 14 59.9	7.04	7.37	24	12 56 3.92	0.66	7 1 7.2	9.89	10.35
10	9 50 18.12	0.49	N. 14 50 11.3	7.08	7.41	25	12 59 56.13	0.67	S. 7 30 41.6	9.99	10.45
11	9 54 48.80	0.49	14 25 1.4	7.12	7.45	26	13 3 47.99	0.68	8 0 7.5	10.08	10.55
12	9 59 18.09	0.49	13 59 30.9	7.16	7.50	27	13 7 39.48	0.69	8 29 24.3	10.18	10.65
13	10 3 46.01	0.49	13 33 40.5	7.21	7.54	28	13 11 30.61	0.69	8 58 31.3	10.27	10.75
14	10 8 12.58	0.50	13 7 30.8	7.25	7.59	29	13 15 21.38	0.70	9 27 27.9	10.37	10.85
15	10 12 37.82	0.50	12 41 2.7	7.30	7.64	30	13 19 11.78	0.71	9 56 13.5	10.47	10.96
16	10 17 1.75	0.50	N. 12 14 16.8	7.35	7.69	31	13 23 1.82	0.72	S. 10 24 47.4	10.58	11.07
17	10 21 24.40	0.50	11 47 13.7	7.39	7.73	Sept. 1	13 26 51.49	0.73	10 53 9.2	10.68	11.18
18	10 25 45.79	0.51	11 19 54.3	7.44	7.78	2	13 30 40.79	0.73	11 21 18.1	10.79	11.29
19	10 30 5.95	0.51	10 52 19.1	7.48	7.83	3	13 34 29.70	0.74	11 49 13.7	10.89	11.40
20	10 34 24.90	0.51	10 24 29.0	7.53	7.88	4	13 38 18.23	0.75	12 16 55.4	11.01	11.52
21	10 38 42.67	0.51	9 56 24.4	7.59	7.94	5	13 42 6.37	0.76	12 44 22.5	11.12	11.64
22	10 42 59.29	0.52	N. 9 28 6.2	7.64	7.99	6	13 45 54.09	0.77	S. 13 11 34.5	11.24	11.76
23	10 47 14.79	0.52	8 59 35.0	7.68	8.04	7	13 49 41.39	0.78	13 38 30.8	11.36	11.89
24	10 51 29.18	0.52	8 30 51.6	7.73	8.09	8	13 53 28.25	0.79	14 5 10.8	11.49	12.02
25	10 55 42.48	0.52	8 1 56.5	7.79	8.15	9	13 57 14.65	0.80	14 31 34.0	11.61	12.15
26	10 59 54.73	0.53	7 32 50.6	7.85	8.21	10	14 1 0.58	0.81	14 57 39.9	11.74	12.28
27	11 4 5.94	0.53	7 3 34.4	7.89	8.26	11	14 4 46.01	0.82	15 23 27.9	11.87	12.42
28	11 8 16.15	0.53	N. 6 34 8.8	7.95	8.32	12	14 8 30.91	0.83	S. 15 48 57.5	12.00	12.56
29	11 12 25.36	0.54	6 4 34.3	8.01	8.38	13	14 12 15.26	0.84	16 14 8.0	12.14	12.70
30	11 16 33.62	0.54	5 34 51.6	8.07	8.44	14	14 15 59.02	0.85	16 38 59.1	12.28	12.85
31	11 20 40.93	0.54	5 5 1.5	8.12	8.50	15	14 19 42.15	0.87	17 3 30.1	12.42	12.99
Aug. 1	11 24 47.33	0.55	4 35 4.5	8.18	8.56	16	14 23 24.61	0.88	17 27 40.5	12.57	13.15
2	11 28 52.85	0.55	4 5 1.3	8.25	8.63	17	14 27 6.37	0.89	17 51 29.9	12.71	13.30
3	11 32 57.50	0.56	N. 3 34 52.6	8.31	8.69	18	14 30 47.36	0.90	S. 18 14 57.6	12.86	13.46
4	11 37 1.31	0.56	3 4 39.0	8.37	8.76	19	14 34 27.53	0.92	18 38 3.3	13.02	13.62
5	11 41 4.31	0.56	2 34 21.1	8.44	8.83	20	14 38 6.82	0.93	19 0 46.3	13.18	13.79
6	11 45 6.54	0.57	2 3 59.7	8.50	8.89	21	14 41 45.15	0.94	19 23 6.2	13.34	13.96
7	11 49 8.02	0.57	1 33 35.2	8.56	8.96	22	14 45 22.45	0.96	19 45 2.4	13.50	14.13
8	11 53 8.77	0.58	1 3 8.4	8.63	9.03	23	14 48 58.63	0.97	20 6 34.6	13.68	14.31
9	11 57 8.84	0.58	N. 0 32 39.8	8.71	9.11	24	14 52 33.60	0.99	S. 20 27 42.1	13.86	14.50
10	12 1 8.23	0.58	N. 0 2 10.1	8.77	9.18	25	14 56 7.26	1.00	20 48 24.4	14.03	14.68
11	12 5 6.99	0.59	S. 0 28 20.1	8.84	9.25	26	14 59 39.51	1.02	21 8 41.1	14.21	14.87
12	12 9 5.13	0.59	0 58 50.3	8.92	9.33	27	15 3 10.23	1.03	21 28 31.7	14.40	15.07
13	12 13 2.69	0.60	1 29 19.7	8.98	9.40	28	15 6 39.32	1.05	21 47 55.7	14.59	15.27
14	12 16 59.69	0.60	1 59 47.8	9.06	9.48	29	15 10 6.65	1.06	22 6 52.5	14.78	15.47
15	12 20 56.16	0.61	S. 2 30 14.1	9.14	9.56	30	15 13 32.10	1.08	S. 22 25 21.8	14.99	15.68
16	12 24 52.11	0.62	3 0 37.9	9.21	9.64	Oct. 1	15 16 55.54	1.10	22 43 23.1	15.20	15.90
17	12 28 47.58	0.62	3 30 58.6	9.30	9.73	2	15 20 16.84	1.12	23 0 56.0	15.41	16.12
18	12 32 42.59	0.63	S. 4 1 15.6	9.38	9.81	3	15 23 35.84	1.13	S. 23 18 0.0	15.62	16.34

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Date.	Apparent Right Ascension.	Sid. Time of Semid. pass <sup>r</sup> Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass <sup>r</sup> Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Oct. 4	15 26 52.41	1.15	S. 23 34 34.7	15.85	16.58	Nov. 19	16 11 44.49	2.28	S. 24 42 41.8	31.00	32.44
5	15 30 6.39	1.17	23 50 39.7	16.07	16.81	20	16 9 33.47	2.28	24 24 3.6	31.19	32.64
6	15 33 17.61	1.19	24 6 14.5	16.30	17.06	21	16 7 18.49	2.29	24 4 36.6	31.35	32.80
7	15 36 25.90	1.21	24 21 18.8	16.54	17.31	22	16 5 0.51	2.29	23 44 25.3	31.47	32.93
8	15 39 31.09	1.23	24 35 52.2	16.78	17.56	23	16 2 40.49	2.29	23 23 34.7	31.57	33.03
9	15 42 33.01	1.25	24 49 54.3	17.04	17.83	24	16 0 19.41	2.29	23 2 10.3	31.62	33.09
							15 57 58.32	2.29	22 40 18.2	31.65	33.12
10	15 45 31.46	1.27	S. 25 3 24.6	17.30	18.10	25	15 55 38.22	2.28	S. 22 18 4.8	31.64	33.11
11	15 48 26.24	1.29	25 16 22.8	17.56	18.37	26	15 53 29.11	2.27	21 55 37.1	31.59	33.06
12	15 51 17.15	1.31	25 28 48.5	17.82	18.65	27	15 51 4.97	2.26	21 33 2.4	31.51	32.97
13	15 54 3.98	1.34	25 40 41.3	18.10	18.94	28	15 48 53.71	2.24	21 10 28.0	31.39	32.85
14	15 56 46.51	1.36	25 52 0.8	18.39	19.24	29	15 46 47.22	2.23	20 48 0.8	31.25	32.70
15	15 59 24.50	1.38	26 2 46.7	18.67	19.54	30	15 44 46.33	2.21	20 25 48.2	31.07	32.51
16	16 1 57.71	1.41	S. 26 12 58.4	18.97	19.85	Dec. 1	15 42 51.79	2.19	S. 20 3 57.1	30.86	32.29
17	16 4 25.90	1.43	26 22 35.6	19.28	20.17	2	15 41 4.28	2.17	19 42 34.1	30.62	32.04
18	16 6 48.81	1.46	26 31 37.7	19.58	20.49	3	15 39 24.38	2.15	19 21 45.1	30.35	31.76
19	16 9 6.17	1.48	26 40 4.3	19.90	20.82	4	15 37 52.63	2.12	19 1 36.2	30.07	31.46
20	16 11 17.68	1.51	26 47 54.8	20.22	21.16	5	15 36 29.48	2.09	18 42 12.6	29.76	31.14
21	16 13 23.08	1.54	26 55 8.6	20.56	21.51	6	15 35 15.30	2.07	18 23 38.9	29.43	30.80
22	16 15 22.05	1.56	S. 27 1 45.1	20.90	21.87	7	15 34 10.37	2.04	S. 18 5 58.7	29.09	30.44
23	16 17 14.28	1.59	27 7 43.5	21.24	22.23	8	15 33 14.90	2.01	17 49 15.4	28.73	30.06
24	16 18 59.45	1.62	27 13 3.1	21.60	22.60	9	15 32 29.04	1.98	17 33 31.9	28.36	29.67
25	16 20 37.24	1.65	27 17 43.1	21.96	22.98	10	15 31 52.88	1.95	17 18 50.3	27.97	29.27
26	16 22 7.35	1.68	27 21 42.6	22.32	23.36	11	15 31 26.43	1.92	17 5 12.0	27.58	28.86
27	16 23 29.47	1.70	27 25 0.7	22.70	23.75	12	15 31 9.67	1.89	16 52 37.9	27.18	28.44
28	16 24 43.30	1.73	S. 27 27 36.2	23.08	24.15	13	15 31 2.54	1.86	S. 16 41 8.6	26.78	28.02
29	16 25 48.51	1.76	27 29 27.9	23.47	24.56	14	15 31 4.93	1.83	16 30 44.1	26.38	27.60
30	16 26 44.83	1.79	27 30 34.7	23.86	24.97	15	15 31 16.67	1.81	16 21 23.8	25.98	27.18

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semid. pass. Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass. Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Jan. 1	14 8 42.05	0.18	S. 11 37 42.5	2.66	5.00	Feb. 16	15 49 13.11	0.25	S. 18 58 5.6	3.60	6.76
2	14 10 55.50	0.18	11 49 30.7	2.67	5.02	17	15 51 18.85	0.26	19 5 8.3	3.63	6.82
3	14 13 8.93	0.18	12 1 13.6	2.69	5.05	18	15 53 24.18	0.26	19 12 4.4	3.66	6.87
4	14 15 22.31	0.18	12 12 51.2	2.70	5.08	19	15 55 29.07	0.26	19 18 53.9	3.68	6.92
5	14 17 35.66	0.19	12 24 23.5	2.72	5.11	20	15 57 33.50	0.26	19 25 36.9	3.71	6.98
6	14 19 48.96	0.19	12 35 50.4	2.73	5.14	21	15 59 37.45	0.26	19 32 13.2	3.74	7.03
7	14 22 2.22	0.19	S. 12 47 11.9	2.75	5.17	22	16 1.40.91	0.27	S. 19 38 43.0	3.77	7.09
8	14 24 15.44	0.19	12 58 27.9	2.77	5.20	23	16 3 43.85	0.27	19 45 6.3	3.81	7.15
9	14 26 28.62	0.19	13 9 38.2	2.79	5.23	24	16 5 46.24	0.27	19 51 23.1	3.84	7.21
10	14 28 41.75	0.19	13 20 43.0	2.80	5.26	25	16 7 48.09	0.27	19 57 33.5	3.87	7.27
11	14 30 54.83	0.19	13 31 42.2	2.82	5.29	26	16 9 49.36	0.28	20 3 37.4	3.90	7.33
12	14 33 7.85	0.19	13 42 35.6	2.83	5.32	27	16 11 50.03	0.28	20 9 35.0	3.94	7.40
13	14 35 20.82	0.20	S. 13 53 23.3	2.85	5.35	28	16 13 50.09	0.28	S. 20 15 26.3	3.97	7.46
14	14 37 33.74	0.20	14 4 5.1	2.86	5.38	Mar. 1	16 15 49.52	0.28	20 21 11.3	4.00	7.52
15	14 39 46.60	0.20	14 14 41.1	2.88	5.41	2	16 17 48.29	0.29	20 26 50.0	4.04	7.59
16	14 41 59.39	0.20	14 25 11.2	2.90	5.45	3	16 19 46.38	0.29	20 32 22.6	4.07	7.65
17	14 44 12.11	0.20	14 35 35.4	2.91	5.48	4	16 21 43.79	0.29	20 37 49.1	4.10	7.72
18	14 46 24.75	0.20	14 45 53.6	2.93	5.52	5	16 23 40.49	0.30	20 43 9.5	4.14	7.79
19	14 48 37.30	0.20	S. 14 56 5.7	2.95	5.55	6	16 25 36.46	0.30	S. 20 48 23.9	4.18	7.86
20	14 50 49.75	0.21	15 6 11.7	2.97	5.59	7	16 27 31.68	0.30	20 53 32.5	4.22	7.93
21	14 53 2.07	0.21	15 16 11.4	2.99	5.63	8	16 29 26.13	0.30	20 58 35.3	4.25	8.00
22	14 55 14.29	0.21	15 26 4.9	3.01	5.66	9	16 31 19.80	0.31	21 3 32.4	4.29	8.07
23	14 57 26.37	0.21	15 35 52.1	3.03	5.70	10	16 33 12.65	0.31	21 8 23.8	4.33	8.14
24	14 59 38.31	0.21	15 45 33.0	3.05	5.74	11	16 35 4.69	0.31	21 13 9.7	4.37	8.21
25	15 1 50.11	0.21	S. 15 55 7.5	3.07	5.78	12	16 36 55.87	0.32	S. 21 17 50.1	4.41	8.29
26	15 4 1.74	0.21	16 4 35.7	3.09	5.82	13	16 38 46.17	0.32	21 22 25.2	4.45	8.36
27	15 6 13.21	0.22	16 13 57.4	3.12	5.86	14	16 40 35.57	0.32	21 26 55.0	4.49	8.44
28	15 8 24.50	0.22	16 23 12.6	3.14	5.90	15	16 42 24.04	0.32	21 31 19.6	4.53	8.52
29	15 10 35.59	0.22	16 32 21.3	3.16	5.94	16	16 44 11.53	0.33	21 35 39.2	4.57	8.60
30	15 12 46.49	0.22	16 41 23.4	3.18	5.98	17	16 45 58.02	0.33	21 39 53.7	4.62	8.68
31	15 14 57.18	0.22	S. 16 50 18.9	3.20	6.02	18	16 47 43.48	0.33	S. 21 44 3.4	4.66	8.76
Feb. 1	15 17 7.66	0.22	16 59 7.9	3.22	6.06	19	16 49 27.86	0.34	21 48 8.3	4.71	8.85
2	15 19 17.92	0.23	17 7 50.3	3.24	6.10	20	16 51 11.14	0.34	21 52 8.6	4.75	8.93
3	15 21 27.95	0.23	17 16 26.0	3.26	6.14	21	16 52 53.27	0.35	21 56 4.4	4.80	9.01
4	15 23 37.73	0.23	17 24 55.1	3.29	6.18	22	16 54 34.23	0.35	21 59 55.8	4.84	9.10
5	15 25 47.27	0.23	17 33 17.5	3.32	6.23	23	16 56 13.98	0.35	22 3 42.9	4.89	9.19
6	15 27 56.55	0.23	S. 17 41 33.3	3.34	6.27	24	16 57 52.48	0.36	S. 22 7 25.8	4.94	9.28
7	15 30 5.55	0.24	17 49 42.5	3.36	6.32	25	16 59 29.69	0.36	22 11 4.7	4.99	9.38
8	15 32 14.29	0.24	17 57 45.0	3.38	6.36	26	17 1 5.57	0.36	22 14 39.6	5.04	9.47
9	15 34 22.75	0.24	18 5 40.9	3.41	6.41	27	17 2 40.09	0.37	22 18 10.8	5.09	9.57
10	15 36 30.92	0.24	18 13 30.0	3.44	6.46	28	17 4 13.22	0.37	22 21 38.3	5.15	9.67
11	15 38 38.79	0.24	18 21 12.5	3.47	6.51	29	17 5 44.91	0.37	22 25 2.2	5.20	9.77
12	15 40 46.35	0.25	S. 18 28 48.4	3.49	6.56	30	17 7 15.14	0.38	S. 22 28 22.9	5.25	9.87
13	15 42 53.58	0.25	18 36 17.7	3.52	6.61	31	17 8 43.86	0.38	22 31 40.3	5.30	9.97
14	15 45 0.46	0.25	18 43 40.3	3.54	6.66	Apr. 1	17 10 11.06	0.39	22 34 54.7	5.36	10.07
15	15 47 6.98	0.25	S. 18 50 56.2	3.57	6.71	2	17 11 36.68	0.39	S. 22 38 6.2	5.41	10.17

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semi- pass- Merid.	Apparent Declination.	Semi- diameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semi- pass- Merid.	Apparent Declination.	Semi- diameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Apr. 3	17 13 0.69	0.40	S. 22 41 14.9	5.47	10.28	May 19	17 35 17.90	0.65	N. 24 58 23.1	8.85	16.65
4	17 14 23.05	0.40	22 44 21.0	5.53	10.39	20	17 34 36.54	0.66	25 1 35.7	8.93	16.80
5	17 15 43.73	0.40	22 47 24.8	5.58	10.50	21	17 33 51.93	0.66	25 4 47.3	9.01	16.95
6	17 17 2.70	0.41	22 50 26.3	5.64	10.61	22	17 33 4.09	0.67	25 7 57.6	9.09	17.09
7	17 18 19.92	0.41	22 53 25.8	5.70	10.72	23	17 32 13.08	0.68	25 11 6.2	9.17	17.23
8	17 19 35.35	0.42	22 56 23.4	5.76	10.83	24	17 31 18.99	0.68	25 14 12.8	9.24	17.37
9	17 20 48.93	0.42	S. 22 59 19.2	5.82	10.95	25	17 30 21.88	0.69	S. 25 17 17.0	9.31	17.51
10	17 22 0.64	0.43	23 2 13.4	5.88	11.06	26	17 29 21.82	0.69	25 20 18.4	9.38	17.64
11	17 23 10.42	0.43	23 5 6.3	5.95	11.18	27	17 28 18.94	0.70	25 23 16.6	9.45	17.77
12	17 24 18.23	0.44	23 7 58.0	6.01	11.30	28	17 27 13.36	0.70	25 26 11.1	9.52	17.89
13	17 25 24.00	0.44	23 10 48.7	6.07	11.42	29	17 26 5.17	0.71	25 29 1.9	9.58	18.01
14	17 26 27.70	0.45	23 13 38.5	6.14	11.55	30	17 24 54.53	0.71	25 31 48.4	9.65	18.13
15	17 27 29.26	0.45	S. 23 16 27.6	6.21	11.67	31	17 23 41.56	0.72	S. 25 34 30.3	9.71	18.25
16	17 28 28.63	0.46	23 19 16.1	6.28	11.80	June 1	17 22 26.42	0.72	25 37 7.4	9.77	18.36
17	17 29 25.74	0.46	23 22 4.2	6.35	11.93	2	17 21 9.25	0.73	25 39 39.2	9.82	18.46
18	17 30 20.55	0.47	23 24 52.2	6.41	12.06	3	17 19 50.20	0.73	25 42 5.3	9.87	18.56
19	17 31 12.99	0.47	23 27 40.1	6.48	12.19	4	17 18 29.46	0.73	25 44 25.8	9.92	18.65
20	17 32 3.00	0.48	23 30 28.1	6.56	12.33	5	17 17 7.19	0.74	25 46 40.2	9.96	18.74
21	17 32 50.54	0.48	S. 23 33 16.4	6.63	12.46	6	17 15 43.55	0.74	S. 25 48 48.4	10.01	18.82
22	17 33 35.56	0.49	23 36 5.0	6.70	12.60	7	17 14 18.71	0.74	25 50 50.1	10.05	18.89
23	17 34 17.99	0.49	23 38 54.0	6.77	12.74	8	17 12 52.86	0.75	25 52 45.1	10.08	18.96
24	17 34 57.78	0.50	23 41 43.7	6.85	12.88	9	17 11 26.19	0.75	25 54 33.2	10.12	19.03
25	17 35 34.88	0.50	23 44 34.2	6.92	13.02	10	17 9 58.86	0.75	25 56 14.5	10.15	19.09
26	17 36 9.25	0.51	23 47 25.4	7.00	13.16	11	17 8 31.06	0.75	25 57 48.6	10.18	19.14
27	17 36 40.83	0.52	S. 23 50 17.4	7.07	13.30	12	17 7 3.00	0.76	S. 25 59 15.7	10.21	19.19
28	17 37 9.58	0.52	23 53 10.6	7.15	13.45	13	17 5 34.88	0.76	26 0 35.6	10.23	19.23
29	17 37 35.46	0.53	23 56 5.0	7.23	13.60	14	17 4 6.90	0.76	26 1 48.5	10.24	19.26
30	17 37 58.41	0.53	23 59 0.5	7.31	13.75	15	17 2 39.27	0.76	26 2 54.1	10.24	19.27
May 1	17 38 18.43	0.54	24 1 57.4	7.39	13.90	16	17 1 12.18	0.76	26 3 52.9	10.25	19.28
2	17 38 35.45	0.55	24 4 55.5	7.47	14.05	17	16 59 45.84	0.76	26 4 44.9	10.25	19.28
3	17 38 49.43	0.55	S. 24 7 54.9	7.55	14.20	18	16 58 20.44	0.76	S. 26 5 30.2	10.25	19.28
4	17 39 0.37	0.56	24 10 55.7	7.63	14.35	19	16 56 56.18	0.76	26 6 9.0	10.26	19.29
5	17 39 8.22	0.56	24 13 57.9	7.71	14.50	20	16 55 33.27	0.76	26 6 41.6	10.26	19.29
6	17 39 12.94	0.57	24 17 1.5	7.80	14.66	21	16 54 11.92	0.76	26 7 8.4	10.25	19.28
7	17 39 14.51	0.58	24 20 6.4	7.88	14.81	22	16 52 52.32	0.76	26 7 29.6	10.24	19.26
8	17 39 12.90	0.58	24 23 12.7	7.96	14.96	23	16 51 34.69	0.76	26 7 45.6	10.22	19.23
9	17 39 8.06	0.59	S. 24 26 20.3	8.04	15.12	24	16 50 19.18	0.76	S. 26 7 56.8	10.20	19.19
10	17 38 59.99	0.60	24 29 29.2	8.12	15.27	25	16 49 5.97	0.76	26 8 3.6	10.18	19.14
11	17 38 48.64	0.60	24 32 39.2	8.21	15.43	26	16 47 55.23	0.75	26 8 6.4	10.15	19.09
12	17 38 34.00	0.61	24 35 50.3	8.29	15.59	27	16 46 47.13	0.75	26 8 5.7	10.12	19.03
13	17 38 16.03	0.62	24 39 2.3	8.38	15.75	28	16 45 41.81	0.75	26 8 2.1	10.09	18.97
14	17 37 54.72	0.62	24 42 15.1	8.46	15.90	29	16 44 39.40	0.75	26 7 55.8	10.06	18.91
15	17 37 30.07	0.63	S. 24 45 28.5	8.54	16.05	30	16 43 40.01	0.74	S. 26 7 47.6	10.03	18.85
16	17 37 2.05	0.63	24 48 42.1	8.62	16.20	July 1	16 42 43.78	0.74	26 7 37.8	9.99	18.78
17	17 36 30.67	0.64	24 51 56.0	8.70	16.35	2	16 41 50.78	0.74	26 7 26.8	9.95	18.71
18	17 35 55.95	0.64	S. 24 55 9.7	8.77	16.50	3	16 41 1.12	0.74	S. 26 7 15.2	9.91	18.63

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
July 4	16 40 14.83	0.73	S. 26 7 3.4	9.86	18.54	Aug. 19	17 7 18.40	0.53	S. 26 37 25.2	7.07	13.30
5	16 39 32.01	0.73	26 6 51.8	9.81	18.44	20	17 9 3.22	0.52	26 38 27.5	7.02	13.19
6	16 38 52.69	0.72	26 6 40.7	9.75	18.34	21	17 10 50.30	0.52	26 39 27.2	6.96	13.09
7	16 38 16.92	0.72	26 6 30.4	9.70	18.24	22	17 12 39.60	0.52	26 40 23.9	6.91	12.99
8	16 37 44.74	0.72	26 6 21.3	9.65	18.14	23	17 14 31.08	0.51	26 41 17.4	6.86	12.89
9	16 37 16.18	0.71	26 6 13.9	9.60	18.05	24	17 16 24.70	0.51	26 42 7.5	6.80	12.79
10	16 36 51.26	0.71	S. 26 6 8.1	9.55	17.95	25	17 18 20.39	0.50	S. 26 42 53.8	6.75	12.69
11	16 36 30.02	0.70	26 6 4.4	9.49	17.84	26	17 20 18.13	0.50	26 43 36.0	6.70	12.59
12	16 36 12.44	0.70	26 6 2.9	9.43	17.73	27	17 22 17.86	0.50	26 44 13.9	6.64	12.49
13	16 35 58.57	0.70	26 6 4.0	9.37	17.62	28	17 24 19.55	0.49	26 44 47.3	6.59	12.40
14	16 35 48.38	0.69	26 6 7.7	9.31	17.51	29	17 26 23.13	0.49	26 45 15.8	6.54	12.31
15	16 35 41.89	0.69	26 6 14.3	9.25	17.40	30	17 28 28.55	0.49	26 45 39.1	6.50	12.22
16	16 35 39.11	0.68	S. 26 6 23.8	9.19	17.28	31	17 30 35.76	0.48	S. 26 45 57.2	6.45	12.13
17	16 35 40.03	0.68	26 6 36.4	9.13	17.16	Sept. 1	17 32 44.74	0.48	26 46 9.4	6.40	12.04
18	16 35 44.63	0.67	26 6 52.2	9.06	17.04	2	17 34 55.42	0.48	26 46 15.7	6.36	11.95
19	16 35 52.93	0.67	26 7 11.3	9.00	16.92	3	17 37 7.75	0.47	26 46 15.6	6.31	11.86
20	16 36 4.89	0.66	26 7 33.8	8.93	16.80	4	17 39 21.70	0.47	26 46 9.1	6.26	11.77
21	16 36 20.50	0.66	26 7 59.7	8.87	16.68	5	17 41 37.23	0.46	26 45 55.8	6.21	11.68
22	16 36 39.73	0.65	S. 26 8 29.0	8.81	16.56	6	17 43 54.30	0.46	S. 26 45 35.5	6.17	11.59
23	16 37 2.58	0.65	26 9 1.7	8.74	16.44	7	17 46 12.86	0.46	26 45 7.8	6.12	11.51
24	16 37 29.02	0.64	26 9 37.9	8.68	16.32	8	17 48 32.89	0.45	26 44 32.7	6.08	11.43
25	16 37 59.00	0.64	26 10 17.4	8.61	16.19	9	17 50 54.34	0.45	26 43 49.8	6.03	11.34
26	16 38 32.50	0.63	26 11 0.3	8.54	16.06	10	17 53 17.18	0.45	26 42 58.8	5.99	11.26
27	16 39 9.49	0.63	26 11 46.5	8.48	15.93	11	17 55 41.38	0.44	26 41 59.6	5.95	11.18
28	16 39 49.91	0.62	S. 26 12 35.9	8.41	15.81	12	17 58 6.89	0.44	S. 26 40 51.9	5.90	11.10
29	16 40 33.71	0.62	26 13 28.4	8.35	15.69	13	18 0 33.71	0.44	26 39 35.5	5.86	11.02
30	16 41 20.87	0.62	26 14 23.8	8.28	15.57	14	18 3 1.79	0.43	26 38 10.2	5.82	10.94
31	16 42 11.28	0.61	26 15 21.9	8.22	15.45	15	18 5 31.10	0.43	26 36 35.8	5.78	10.86
Aug. 1	16 43 4.92	0.61	26 16 22.7	8.16	15.33	16	18 8 1.61	0.43	26 34 52.0	5.73	10.78
2	16 44 1.72	0.60	26 17 25.9	8.09	15.21	17	18 10 33.31	0.42	26 32 58.7	5.69	10.71
3	16 45 1.61	0.60	S. 26 18 31.2	8.03	15.09	18	18 13 6.16	0.42	S. 26 30 55.8	5.66	10.64
4	16 46 4.56	0.59	26 19 38.6	7.96	14.97	19	18 15 40.12	0.42	26 28 42.9	5.62	10.56
5	16 47 10.49	0.59	26 20 47.6	7.90	14.85	20	18 18 15.17	0.42	26 26 20.0	5.58	10.49
6	16 48 19.34	0.58	26 21 58.1	7.84	14.73	21	18 20 51.28	0.41	26 23 46.9	5.54	10.42
7	16 49 31.07	0.58	26 23 9.8	7.77	14.61	22	18 23 28.43	0.41	26 21 3.5	5.50	10.35
8	16 50 45.63	0.57	26 24 22.4	7.71	14.50	23	18 26 6.57	0.41	26 18 9.6	5.47	10.28
9	16 52 2.96	0.57	S. 26 25 35.7	7.65	14.39	24	18 28 45.66	0.40	S. 26 15 5.0	5.43	10.21
10	16 53 23.01	0.57	26 26 49.5	7.59	14.27	25	18 31 25.67	0.40	26 11 49.6	5.39	10.14
11	16 54 45.74	0.56	26 28 3.5	7.53	14.16	26	18 34 6.58	0.40	26 8 23.3	5.36	10.07
12	16 56 11.09	0.56	26 29 17.2	7.47	14.05	27	18 36 48.32	0.39	26 4 45.9	5.32	10.00
13	16 57 39.03	0.55	26 30 30.5	7.41	13.94	28	18 39 30.87	0.39	26 0 57.4	5.28	9.94
14	16 59 9.50	0.55	26 31 43.0	7.35	13.83	29	18 42 14.19	0.39	25 56 57.6	5.25	9.87
15	17 0 42.46	0.54	S. 26 32 54.5	7.30	13.72	30	18 44 58.25	0.39	S. 25 52 46.6	5.21	9.80
16	17 2 17.86	0.54	26 34 4.8	7.24	13.61	Oct. 1	18 47 43.02	0.38	25 48 24.0	5.18	9.73
17	17 3 55.69	0.53	26 35 13.5	7.18	13.50	2	18 50 28.46	0.38	25 43 49.7	5.15	9.67
18	17 5 35.88	0.53	S. 26 36 20.4	7.13	13.40	3	18 53 14.53	0.38	S. 25 39 3.8	5.11	9.61



# MARS, 1922.

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## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Oct. 4	18 56 1.22	0.37	S. 25 34 6.2	5.07	9.54	Nov. 19	21 8 20.91	0.27	S. 18 10 13.2	3.85	7.24
5	18 58 48.50	0.37	25 28 56.7	5.04	9.48	20	21 11 12.87	0.27	17 56 13.9	3.83	7.20
6	19 1 36.31	0.37	25 23 35.2	5.01	9.42	21	21 14 4.64	0.27	17 42 5.4	3.81	7.16
7	19 4 24.65	0.37	25 18 1.7	4.98	9.36	22	21 16 56.19	0.26	17 27 47.7	3.79	7.12
8	19 7 13.49	0.36	25 12 16.1	4.95	9.30	23	21 19 47.52	0.26	17 13 20.9	3.77	7.08
9	19 10 2.81	0.36	25 6 18.4	4.91	9.24	24	21 22 38.62	0.26	16 58 45.3	3.74	7.04
10	19 12 52.58	0.36	S. 25 0 8.5	4.88	9.18	25	21 25 29.48	0.26	S. 16 44 1.0	3.72	7.00
11	19 15 42.78	0.36	24 53 46.4	4.85	9.12	26	21 28 20.09	0.26	16 29 8.2	3.70	6.96
12	19 18 33.38	0.35	24 47 11.9	4.82	9.06	27	21 31 10.46	0.26	16 14 7.1	3.68	6.92
13	19 21 24.37	0.35	24 40 25.2	4.79	9.01	28	21 34 0.57	0.25	15 58 57.8	3.66	6.88
14	19 24 15.72	0.35	24 33 26.2	4.76	8.95	29	21 36 50.42	0.25	15 43 40.5	3.64	6.84
15	19 27 7.42	0.35	24 26 14.7	4.72	8.89	30	21 39 40.00	0.25	15 28 15.3	3.62	6.81
16	19 29 59.45	0.34	S. 24 18 50.9	4.70	8.84	Dec. 1	21 42 29.30	0.25	S. 15 12 42.4	3.60	6.77
17	19 32 51.78	0.34	24 11 14.8	4.67	8.78	2	21 45 18.34	0.25	14 57 2.1	3.58	6.74
18	19 35 44.41	0.34	24 3 26.3	4.64	8.73	3	21 48 7.09	0.25	14 41 14.4	3.56	6.70
19	19 38 37.30	0.34	23 55 25.4	4.61	8.67	4	21 50 55.57	0.24	14 25 19.5	3.54	6.66
20	19 41 30.43	0.33	23 47 12.1	4.58	8.62	5	21 53 43.77	0.24	14 9 17.6	3.52	6.63
21	19 44 23.81	0.33	23 38 46.6	4.56	8.57	6	21 56 31.69	0.24	13 53 8.9	3.50	6.59
22	19 47 17.39	0.33	S. 23 30 8.7	4.53	8.52	7	21 59 19.36	0.24	S. 13 36 53.5	3.48	6.56
23	19 50 11.14	0.33	23 21 18.7	4.51	8.47	8	22 2 6.74	0.24	13 20 31.5	3.47	6.52
24	19 53 5.05	0.32	23 12 16.5	4.48	8.42	9	22 4 53.86	0.24	13 4 3.1	3.45	6.49
25	19 55 59.10	0.32	23 3 2.1	4.45	8.37	10	22 7 40.70	0.23	12 47 28.6	3.43	6.45
26	19 58 53.26	0.32	22 53 35.7	4.42	8.32	11	22 10 27.29	0.23	12 30 47.9	3.41	6.42
27	20 1 47.49	0.32	22 43 57.2	4.40	8.27	12	22 13 13.61	0.23	12 14 1.4	3.40	6.39
28	20 4 41.80	0.32	S. 22 34 6.8	4.37	8.22	13	22 15 59.69	0.23	S. 11 57 9.1	3.38	6.35
29	20 7 36.14	0.31	22 24 4.5	4.35	8.17	14	22 18 45.51	0.23	11 40 11.3	3.36	6.32
30	20 10 30.51	0.31	22 13 50.5	4.32	8.12	15	22 21 31.10	0.23	11 23 8.0	3.34	6.29
31	20 13 24.89	0.31	22 3 24.7	4.29	8.07	16	22 24 16.44	0.23	11 5 59.5	3.33	6.26
Nov. 1	20 16 19.26	0.31	21 52 47.3	4.26	8.02	17	22 27 1.55	0.22	10 48 45.9	3.31	6.23
2	20 19 13.58	0.30	21 41 58.3	4.24	7.98	18	22 29 46.43	0.22	10 31 27.4	3.30	6.20
3	20 22 7.85	0.30	S. 21 30 57.9	4.21	7.93	19	22 32 31.07	0.22	S. 10 14 4.2	3.28	6.17
4	20 25 2.07	0.30	21 19 46.0	4.19	7.88	20	22 35 15.48	0.22	9 56 36.4	3.26	6.14
5	20 27 56.21	0.30	21 8 22.9	4.17	7.84	21	22 37 59.65	0.22	9 39 4.4	3.25	6.11
6	20 30 50.26	0.30	20 56 48.6	4.14	7.79	22	22 40 43.60	0.22	9 21 28.2	3.23	6.08
7	20 33 44.22	0.29	20 45 3.2	4.12	7.75	23	22 43 27.32	0.22	9 3 48.0	3.22	6.05
8	20 36 38.06	0.29	20 33 6.9	4.09	7.70	24	22 46 10.80	0.22	8 46 4.0	3.20	6.02
9	20 39 31.78	0.29	S. 20 20 59.6	4.07	7.66	25	22 48 54.06	0.22	S. 8 28 16.4	3.19	5.99
10	20 42 25.37	0.29	20 8 41.6	4.05	7.61	26	22 51 37.09	0.21	8 10 25.4	3.17	5.96
11	20 45 18.83	0.29	19 56 12.9	4.03	7.57	27	22 54 19.90	0.21	7 52 31.0	3.15	5.93
12	20 48 12.14	0.28	19 43 33.7	4.01	7.53	28	22 57 2.49	0.21	7 34 33.6	3.14	5.90
13	20 51 5.31	0.28	19 30 44.0	3.98	7.48	29	22 59 44.86	0.21	7 16 33.2	3.12	5.87
14	20 53 58.33	0.28	19 17 43.9	3.96	7.44	30	23 2 27.02	0.21	6 58 30.2	3.10	5.84
15	20 56 51.19	0.28	S. 19 4 33.6	3.94	7.40	31	23 5 8.97	0.21	S. 6 40 24.6	3.09	5.81
16	20 59 43.89	0.28	18 51 13.3	3.92	7.36	32	23 7 50.71	0.21	S. 6 22 16.6	3.08	5.79
17	21 2 36.41	0.27	18 37 43.0	3.89	7.32						
18	21 5 28.75	0.27	S. 18 24 2.9	3.87	7.28						

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Equat. Semi- pass <sup>4</sup> Merid.	Apparent Declination.	Polar Semi- diameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Equat. Semi- pass <sup>4</sup> Merid.	Apparent Declination.	Polar Semi- diameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Jan. 1	13 559.33	1.21	S. 5 36 41.4	16.80	1.61	Feb. 16	13 10 50.58	1.38	S. 5 54 4.3	19.25	1.84
2	13 620.31	1.21	5 38 35.5	16.85	1.61	17	13 10 40.75	1.39	5 52 49.1	19.30	1.84
3	13 640.71	1.21	5 40 25.8	16.90	1.62	18	13 10 30.24	1.39	5 51 29.9	19.35	1.85
4	13 7 0.52	1.22	5 42 12.4	16.95	1.62	19	13 10 19.06	1.40	5 50 6.7	19.40	1.86
5	13 7 19.74	1.22	5 43 55.1	17.00	1.63	20	13 10 7.23	1.40	5 48 39.6	19.44	1.86
6	13 7 38.36	1.22	5 45 33.9	17.05	1.63	21	13 9 54.73	1.40	5 47 8.6	19.49	1.87
7	13 7 56.36	1.23	S. 5 47 8.8	17.10	1.64	22	13 9 41.57	1.41	S. 5 45 33.8	19.54	1.87
8	13 8 13.76	1.23	5 48 39.8	17.15	1.64	23	13 9 27.78	1.41	5 43 55.2	19.59	1.87
9	13 8 30.54	1.23	5 50 7.0	17.20	1.65	24	13 9 13.36	1.41	5 42 13.0	19.64	1.88
10	13 8 46.70	1.24	5 51 30.2	17.25	1.65	25	13 8 58.30	1.41	5 40 27.0	19.68	1.88
11	13 9 2.24	1.24	5 52 49.4	17.31	1.66	26	13 8 42.63	1.42	5 38 37.5	19.73	1.89
12	13 9 17.15	1.24	5 54 4.6	17.36	1.66	27	13 8 26.35	1.42	5 36 44.4	19.77	1.89
13	13 9 31.42	1.25	S. 5 55 15.9	17.42	1.67	28	13 8 9.48	1.42	S. 5 34 47.9	19.82	1.90
14	13 9 45.05	1.25	5 56 23.1	17.47	1.67	Mar. 1	13 7 52.01	1.43	5 32 47.9	19.86	1.90
15	13 9 58.04	1.26	5 57 26.2	17.53	1.68	2	13 7 33.97	1.43	5 30 44.7	19.90	1.90
16	13 10 10.37	1.26	5 58 25.3	17.58	1.68	3	13 7 15.36	1.43	5 28 38.3	19.94	1.91
17	13 10 22.05	1.27	5 59 20.3	17.63	1.69	4	13 6 56.20	1.43	5 26 28.7	19.97	1.91
18	13 10 33.06	1.27	6 0 11.1	17.69	1.69	5	13 6 36.51	1.44	5 24 15.9	20.01	1.92
19	13 10 43.40	1.27	S. 6 0 57.8	17.74	1.70	6	13 6 16.30	1.44	S. 5 22 0.1	20.05	1.92
20	13 10 53.07	1.28	6 1 40.3	17.80	1.70	7	13 5 55.57	1.44	5 19 41.4	20.08	1.92
21	13 11 2.06	1.28	6 2 18.6	17.85	1.71	8	13 5 34.35	1.44	5 17 19.9	20.12	1.93
22	13 11 10.37	1.28	6 2 52.8	17.91	1.71	9	13 5 12.64	1.44	5 14 55.6	20.15	1.93
23	13 11 17.98	1.29	6 3 22.6	17.96	1.72	10	13 4 50.46	1.45	5 12 28.7	20.19	1.93
24	13 11 24.91	1.29	6 3 48.2	18.02	1.72	11	13 4 27.83	1.45	5 9 59.2	20.22	1.94
25	13 11 31.15	1.29	S. 6 4 9.5	18.07	1.73	12	13 4 4.76	1.45	S. 5 7 27.3	20.25	1.94
26	13 11 36.68	1.30	6 4 26.6	18.12	1.73	13	13 3 41.26	1.45	5 4 53.1	20.28	1.94
27	13 11 41.52	1.30	6 4 39.4	18.17	1.74	14	13 3 17.35	1.45	5 2 16.5	20.31	1.95
28	13 11 45.65	1.31	6 4 48.0	18.23	1.74	15	13 2 53.05	1.46	4 59 37.7	20.34	1.95
29	13 11 49.08	1.31	6 4 52.2	18.28	1.75	16	13 2 28.36	1.46	4 56 56.8	20.37	1.95
30	13 11 51.80	1.32	6 4 52.2	18.34	1.76	17	13 2 3.31	1.46	4 54 13.9	20.40	1.95
31	13 11 53.81	1.32	S. 6 4 47.9	18.39	1.76	18	13 1 37.90	1.46	S. 4 51 29.1	20.43	1.95
Feb. 1	13 11 55.12	1.33	6 4 39.3	18.44	1.77	19	13 1 12.16	1.46	4 48 42.5	20.45	1.96
2	13 11 55.73	1.33	6 4 26.5	18.50	1.77	20	13 0 46.11	1.47	4 45 54.2	20.47	1.96
3	13 11 55.63	1.33	6 4 9.3	18.55	1.78	21	13 0 19.76	1.47	4 43 4.4	20.49	1.96
4	13 11 54.81	1.34	6 3 47.9	18.61	1.78	22	12 59 53.12	1.47	4 40 13.2	20.51	1.96
5	13 11 53.30	1.34	6 3 22.2	18.66	1.79	23	12 59 26.23	1.47	4 37 20.7	20.53	1.97
6	13 11 51.08	1.34	S. 6 2 52.3	18.72	1.79	24	12 58 59.10	1.47	S. 4 34 27.0	20.55	1.97
7	13 11 48.16	1.35	6 2 18.2	18.77	1.79	25	12 58 31.74	1.47	4 31 32.2	20.57	1.97
8	13 11 44.54	1.35	6 1 39.9	18.83	1.80	26	12 58 4.18	1.47	4 28 36.4	20.59	1.97
9	13 11 40.21	1.36	6 0 57.4	18.88	1.80	27	12 57 36.44	1.47	4 25 39.9	20.60	1.97
10	13 11 35.19	1.36	6 0 10.8	18.94	1.81	28	12 57 8.53	1.47	4 22 42.6	20.61	1.97
11	13 11 29.47	1.36	5 59 20.0	19.00	1.82	29	12 56 40.48	1.47	4 19 44.8	20.62	1.97
12	13 11 23.07	1.37	S. 5 58 25.0	19.05	1.82	30	12 56 12.31	1.48	S. 4 16 46.5	20.62	1.97
13	13 11 15.98	1.37	5 57 25.9	19.10	1.83	31	12 55 44.05	1.48	4 13 47.9	20.63	1.97
14	13 11 8.19	1.38	5 56 22.8	19.15	1.83	Apr. 1	12 55 15.71	1.48	4 10 49.1	20.63	1.97
15	13 10 59.73	1.38	S. 5 55 15.6	19.20	1.84	2	12 54 47.31	1.48	S. 4 7 50.3	20.63	1.98

# JUPITER, 1922.

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## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Equat. pass. Merid.	Apparent Declination.	Polar Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Equat. Semid. pass. Merid.	Apparent Declination.	Polar Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Apr. 3	12 54 18.87	1.48	S. 4 4 51.6	20.63	1.98	May 19	12 36 58.37	1.39	S. 2 21 34.3	19.42	1.86
4	12 53 50.42	1.48	4 1 53.1	20.64	1.98	20	12 36 46.93	1.38	2 20 36.6	19.38	1.86
5	12 53 21.96	1.48	3 58 54.9	20.64	1.98	21	12 36 36.12	1.38	2 19 43.0	19.33	1.85
6	12 52 53.53	1.48	3 55 57.1	20.64	1.98	22	12 36 25.94	1.38	2 18 53.6	19.28	1.85
7	12 52 25.14	1.48	3 53 0.0	20.63	1.98	23	12 36 16.40	1.37	2 18 8.4	19.23	1.84
8	12 51 56.81	1.48	3 50 3.6	20.63	1.98	24	12 36 7.51	1.37	2 17 27.5	19.18	1.84
9	12 51 28.57	1.48	S. 3 47 8.0	20.62	1.97	25	12 35 59.26	1.37	S. 2 16 50.8	19.13	1.83
10	12 51 0.43	1.48	3 44 13.4	20.62	1.97	26	12 35 51.66	1.36	2 16 18.4	19.08	1.83
11	12 50 32.40	1.48	3 41 19.8	20.61	1.97	27	12 35 44.72	1.36	2 15 50.3	19.03	1.82
12	12 50 4.51	1.47	3 38 27.4	20.60	1.97	28	12 35 38.43	1.36	2 15 26.5	18.98	1.82
13	12 49 36.78	1.47	3 35 36.3	20.59	1.97	29	12 35 32.81	1.35	2 15 7.0	18.93	1.81
14	12 49 9.21	1.47	3 32 46.6	20.57	1.97	30	12 35 27.85	1.35	2 14 51.8	18.88	1.81
15	12 48 41.83	1.47	S. 3 29 58.4	20.56	1.97	31	12 35 23.55	1.35	S. 2 14 41.0	18.82	1.80
16	12 48 14.67	1.47	3 27 11.9	20.54	1.97	June 1	12 35 19.92	1.34	2 14 34.4	18.77	1.80
17	12 47 47.73	1.47	3 24 27.1	20.53	1.97	2	12 35 16.94	1.34	2 14 32.2	18.72	1.79
18	12 47 21.02	1.47	3 21 44.2	20.51	1.96	3	12 35 14.63	1.34	2 14 34.3	18.67	1.79
19	12 46 54.58	1.47	3 19 3.2	20.49	1.96	4	12 35 12.99	1.33	2 14 40.6	18.62	1.78
20	12 46 28.42	1.46	3 16 24.4	20.47	1.96	5	12 35 12.00	1.33	2 14 51.3	18.56	1.78
21	12 46 2.56	1.46	S. 3 13 47.7	20.45	1.96	6	12 35 11.67	1.33	S. 2 15 6.2	18.51	1.77
22	12 45 37.01	1.46	3 11 13.3	20.43	1.96	7	12 35 11.99	1.32	2 15 25.3	18.46	1.77
23	12 45 11.79	1.46	3 8 41.4	20.40	1.95	8	12 35 12.98	1.32	2 15 48.7	18.41	1.76
24	12 44 46.92	1.46	3 6 12.0	20.38	1.95	9	12 35 14.61	1.31	2 16 16.3	18.36	1.76
25	12 44 22.42	1.45	3 3 45.2	20.35	1.95	10	12 35 16.90	1.31	2 16 48.0	18.30	1.75
26	12 43 58.30	1.45	3 1 21.1	20.32	1.95	11	12 35 19.83	1.31	2 17 23.9	18.25	1.75
27	12 43 34.57	1.45	S. 2 58 59.8	20.29	1.94	12	12 35 23.42	1.30	S. 2 18 4.1	18.19	1.74
28	12 43 11.26	1.45	2 56 41.4	20.26	1.94	13	12 35 27.65	1.30	2 18 48.3	18.14	1.74
29	12 42 48.37	1.45	2 54 26.0	20.23	1.94	14	12 35 32.53	1.29	2 19 36.7	18.09	1.73
30	12 42 25.92	1.44	2 52 13.7	20.20	1.93	15	12 35 38.05	1.29	2 20 29.2	18.03	1.73
May 1	12 42 3.93	1.44	2 50 4.5	20.17	1.93	16	12 35 44.20	1.28	2 21 25.8	17.98	1.72
2	12 41 42.42	1.44	2 47 58.6	20.14	1.93	17	12 35 51.00	1.28	2 22 26.5	17.93	1.72
3	12 41 21.39	1.44	S. 2 45 56.1	20.10	1.92	18	12 35 58.43	1.28	S. 2 23 31.1	17.88	1.71
4	12 41 0.85	1.43	2 43 56.9	20.06	1.92	19	12 36 6.50	1.27	2 24 39.8	17.83	1.71
5	12 40 40.82	1.43	2 42 1.1	20.02	1.92	20	12 36 15.19	1.27	2 25 52.5	17.77	1.70
6	12 40 21.30	1.43	2 40 8.9	19.98	1.91	21	12 36 24.51	1.27	2 27 9.2	17.71	1.70
7	12 40 2.31	1.43	2 38 20.3	19.94	1.91	22	12 36 34.46	1.26	2 28 29.8	17.65	1.69
8	12 39 43.85	1.42	2 36 35.4	19.90	1.91	23	12 36 45.03	1.26	2 29 54.4	17.60	1.69
9	12 39 25.93	1.42	S. 2 34 54.1	19.86	1.90	24	12 36 56.23	1.26	S. 2 31 22.8	17.55	1.68
10	12 39 8.57	1.42	2 33 16.6	19.82	1.90	25	12 37 8.04	1.25	2 32 55.1	17.50	1.68
11	12 38 51.76	1.41	2 31 42.9	19.78	1.89	26	12 37 20.46	1.25	2 34 31.3	17.45	1.67
12	12 38 35.52	1.41	2 30 13.0	19.74	1.89	27	12 37 33.49	1.24	2 36 11.2	17.40	1.67
13	12 38 19.86	1.41	2 28 46.9	19.70	1.89	28	12 37 47.11	1.24	2 37 55.0	17.35	1.66
14	12 38 4.78	1.40	2 27 24.8	19.66	1.88	29	12 38 1.34	1.23	2 39 42.4	17.30	1.66
15	12 37 50.29	1.40	S. 2 26 6.6	19.61	1.88	30	12 38 16.17	1.23	S. 2 41 33.5	17.25	1.65
16	12 37 36.40	1.40	2 24 52.4	19.56	1.87	July 1	12 38 31.57	1.23	2 43 28.2	17.20	1.65
17	12 37 23.11	1.39	2 23 42.2	19.51	1.87	2	12 38 47.55	1.22	2 45 26.5	17.15	1.64
18	12 37 10.43	1.39	S. 2 22 36.2	19.47	1.86	3	12 39 4.11	1.22	S. 2 47 28.4	17.10	1.64

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Equat. Semi- pass Merid.	Apparent Declination.	Polar Semi-diameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Equat. Semi- pass Merid.	Apparent Declination.	Polar Semi-diameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
July 4	12 39 21.25	1.22	S. 2 49 33.8	17.05	1.63	July 21	12 45 34.53	1.16	S. 3 33 26.9	16.26	1.56
5	12 39 38.94	1.21	2 51 42.7	17.01	1.63	22	12 46 1.04	1.16	3 36 29.2	16.22	1.56
6	12 39 57.19	1.21	2 53 55.0	16.96	1.62	23	12 46 28.04	1.16	3 39 34.3	16.18	1.55
7	12 40 15.99	1.21	2 56 10.7	16.91	1.62	24	12 46 55.50	1.16	3 42 42.1	16.14	1.55
8	12 40 35.34	1.20	2 58 29.8	16.86	1.61	25	12 47 23.43	1.15	3 45 52.6	16.10	1.54
9	12 40 55.23	1.20	3 0 52.2	16.81	1.61	26	12 47 51.81	1.15	3 49 5.8	16.06	1.54
10	12 41 15.66	1.20	S. 3 3 18.0	16.77	1.61	27	12 48 20.65	1.15	S. 3 52 21.7	16.02	1.53
11	12 41 36.62	1.19	3 5 46.9	16.72	1.60	28	12 48 49.94	1.15	3 55 40.1	15.98	1.53
12	12 41 58.11	1.19	3 8 19.0	16.68	1.60	29	12 49 19.67	1.14	3 59 1.1	15.94	1.53
13	12 42 20.13	1.19	3 10 54.4	16.63	1.59	30	12 49 49.84	1.14	4 2 24.5	15.91	1.52
14	12 42 42.66	1.18	3 13 32.9	16.58	1.59	31	12 50 20.43	1.14	4 5 50.4	15.87	1.52
15	12 43 5.71	1.18	3 16 14.5	16.54	1.58	Aug. 1	12 50 51.44	1.14	4 9 18.7	15.83	1.52
16	12 43 29.27	1.18	S. 3 18 59.2	16.49	1.58	2	12 51 22.87	1.13	S. 4 12 49.4	15.79	1.51
17	12 43 53.34	1.17	3 21 46.8	16.45	1.57	3	12 51 54.71	1.13	4 16 22.5	15.75	1.51
18	12 44 17.90	1.17	3 24 37.4	16.40	1.57	4	12 52 26.96	1.13	4 19 57.8	15.72	1.50
19	12 44 42.95	1.17	3 27 31.0	16.36	1.56	5	12 52 59.61	1.12	S. 4 23 35.3	15.68	1.50
20	12 45 8.50	1.17	S. 3 30 27.5	16.31	1.56						

## SATURN, 1922.

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## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Equat. Semid. pass# Merid.	Apparent Declination.	Polar Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Equat. Semid. pass# Merid.	Apparent Declination.	Polar Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Jan. 1	12 30 53.73	0.59	S. 0 47 10.7	7.93	0.94	Feb. 16	12 28 56.16	0.63	S. 0 21 4.3	8.53	1.01
2	12 30 59.91	0.59	0 47 31.9	7.94	0.94	17	12 28 45.11	0.64	0 19 38.7	8.54	1.01
3	12 31 5.70	0.59	0 47 50.6	7.96	0.94	18	12 28 33.76	0.64	0 18 11.4	8.55	1.01
4	12 31 11.11	0.59	0 48 6.8	7.97	0.94	19	12 28 22.11	0.64	0 16 42.4	8.56	1.01
5	12 31 16.12	0.59	0 48 20.4	7.99	0.94	20	12 28 10.16	0.64	0 15 11.9	8.57	1.01
6	12 31 20.74	0.60	0 48 31.4	8.00	0.94	21	12 27 57.93	0.64	0 13 39.7	8.58	1.01
7	12 31 24.96	0.60	S. 0 48 39.9	8.01	0.95	22	12 27 45.42	0.64	S. 0 12 6.0	8.59	1.01
8	12 31 28.80	0.60	0 48 45.9	8.03	0.95	23	12 27 32.64	0.64	0 10 30.8	8.60	1.01
9	12 31 32.24	0.60	0 48 49.3	8.04	0.95	24	12 27 19.60	0.64	0 8 54.2	8.61	1.02
10	12 31 35.29	0.60	0 48 50.3	8.06	0.95	25	12 27 6.30	0.64	0 7 16.1	8.61	1.02
11	12 31 37.94	0.60	0 48 48.6	8.07	0.95	26	12 26 52.74	0.64	0 5 36.8	8.62	1.02
12	12 31 40.19	0.60	0 48 44.4	8.08	0.95	27	12 26 38.95	0.64	0 3 56.1	8.63	1.02
13	12 31 42.05	0.60	S. 0 48 37.6	8.10	0.96	28	12 26 24.93	0.64	S. 0 2 14.3	8.64	1.02
14	12 31 43.52	0.60	0 48 28.4	8.11	0.96	Mar. 1	12 26 10.67	0.64	S. 0 0 31.2	8.65	1.02
15	12 31 44.58	0.61	0 48 16.6	8.13	0.96	2	12 25 56.20	0.64	N. 0 1 12.9	8.65	1.02
16	12 31 45.26	0.61	0 48 2.2	8.14	0.96	3	12 25 41.52	0.64	0 2 58.1	8.66	1.02
17	12 31 45.54	0.61	0 47 45.3	8.15	0.96	4	12 25 26.63	0.64	0 4 44.3	8.67	1.02
18	12 31 45.42	0.61	0 47 26.0	8.17	0.96	5	12 25 11.55	0.65	0 6 31.4	8.67	1.02
19	12 31 44.90	0.61	S. 0 47 4.2	8.18	0.96	6	12 24 56.29	0.65	N. 0 8 19.4	8.67	1.02
20	12 31 43.98	0.61	0 46 39.8	8.20	0.97	7	12 24 40.85	0.65	0 10 8.2	8.68	1.02
21	12 31 42.67	0.61	0 46 13.0	8.21	0.97	8	12 24 25.25	0.65	0 11 57.7	8.68	1.02
22	12 31 40.96	0.61	0 45 43.6	8.22	0.97	9	12 24 9.48	0.65	0 13 48.0	8.69	1.03
23	12 31 38.85	0.61	0 45 11.8	8.24	0.97	10	12 23 53.57	0.65	0 15 38.9	8.69	1.03
24	12 31 36.35	0.62	0 44 37.5	8.25	0.97	11	12 23 37.52	0.65	0 17 30.4	8.70	1.03
25	12 31 33.46	0.62	S. 0 44 0.8	8.27	0.98	12	12 23 21.33	0.65	N. 0 19 22.4	8.70	1.03
26	12 31 30.17	0.62	0 43 21.6	8.28	0.98	13	12 23 5.02	0.65	0 21 14.9	8.71	1.03
27	12 31 26.50	0.62	0 42 40.1	8.29	0.98	14	12 22 48.59	0.65	0 23 7.8	8.71	1.03
28	12 31 22.44	0.62	0 41 56.1	8.31	0.98	15	12 22 32.05	0.65	0 25 1.1	8.71	1.03
29	12 31 17.99	0.62	0 41 9.8	8.32	0.98	16	12 22 15.41	0.65	0 26 54.6	8.72	1.03
30	12 31 13.17	0.62	0 40 21.1	8.34	0.98	17	12 21 58.68	0.65	0 28 48.4	8.72	1.03
31	12 31 7.97	0.62	S. 0 39 30.2	8.35	0.99	18	12 21 41.86	0.65	N. 0 30 42.4	8.72	1.03
Feb. 1	12 31 2.39	0.62	0 38 36.9	8.37	0.99	19	12 21 24.98	0.65	0 32 36.5	8.72	1.03
2	12 30 56.43	0.62	0 37 41.3	8.38	0.99	20	12 21 8.03	0.65	0 34 30.7	8.73	1.03
3	12 30 50.11	0.62	0 36 43.6	8.39	0.99	21	12 20 51.02	0.65	0 36 24.8	8.73	1.03
4	12 30 43.41	0.63	0 35 43.7	8.40	0.99	22	12 20 33.96	0.65	0 38 18.9	8.73	1.03
5	12 30 36.36	0.63	0 34 41.6	8.41	0.99	23	12 20 16.87	0.65	0 40 12.9	8.73	1.03
6	12 30 28.94	0.63	S. 0 33 37.4	8.43	0.99	24	12 19 59.75	0.65	N. 0 42 6.7	8.73	1.03
7	12 30 21.18	0.63	0 32 31.0	8.44	0.99	25	12 19 42.62	0.65	0 44 0.2	8.73	1.03
8	12 30 13.07	0.63	0 31 22.6	8.45	1.00	26	12 19 25.48	0.65	0 45 53.5	8.73	1.03
9	12 30 4.62	0.63	0 30 12.1	8.46	1.00	27	12 19 8.34	0.65	0 47 46.3	8.73	1.03
10	12 29 55.83	0.63	0 28 59.6	8.47	1.00	28	12 18 51.22	0.65	0 49 38.6	8.72	1.03
11	12 29 46.70	0.63	0 27 45.1	8.48	1.00	29	12 18 34.11	0.65	0 51 30.5	8.72	1.03
12	12 29 37.24	0.63	S. 0 26 28.6	8.49	1.00	30	12 18 17.04	0.65	N. 0 53 21.9	8.72	1.03
13	12 29 27.45	0.63	0 25 10.3	8.50	1.00	31	12 18 0.01	0.65	0 55 12.6	8.72	1.03
14	12 29 17.34	0.63	0 23 50.1	8.51	1.00	Apr. 1	12 17 43.02	0.65	0 57 2.5	8.72	1.03
15	12 29 6.91	0.63	S. 0 22 28.1	8.52	1.01	2	12 17 26.10	0.65	N. 0 58 51.8	8.72	1.03

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Equat. Semid. pass <sup>+</sup> Merid.	Apparent Declination.	Polar Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Equat. Semid. pass <sup>+</sup> Merid.	Apparent Declination.	Polar Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Apr. 3	12 17 9.25	0.65	N. 1 0 40.2	8.71	1.03	May 19	12 7 41.76	0.62	N. 1 55 53.1	8.32	0.98
4	12 16 52.48	0.65	1 2 27.8	8.71	1.03	20	12 7 36.20	0.62	1 56 15.8	8.31	0.98
5	12 16 35.80	0.65	1 4 14.4	8.71	1.03	21	12 7 30.99	0.62	1 56 36.1	8.29	0.98
6	12 16 19.21	0.65	1 6 0.1	8.70	1.03	22	12 7 26.13	0.62	1 56 54.0	8.28	0.98
7	12 16 2.74	0.65	1 7 44.8	8.70	1.03	23	12 7 21.64	0.62	1 57 9.3	8.26	0.97
8	12 15 46.37	0.65	1 9 28.4	8.69	1.03	24	12 7 17.52	0.62	1 57 22.2	8.25	0.97
9	12 15 30.12	0.65	N. 1 11 10.8	8.69	1.03	25	12 7 13.75	0.61	N. 1 57 32.7	8.23	0.97
10	12 15 14.01	0.65	1 12 52.1	8.68	1.02	26	12 7 10.35	0.61	1 57 40.7	8.22	0.97
11	12 14 58.03	0.65	1 14 32.1	8.68	1.02	27	12 7 7.32	0.61	1 57 46.2	8.21	0.97
12	12 14 42.19	0.65	1 16 10.8	8.67	1.02	28	12 7 4.66	0.61	1 57 49.3	8.19	0.97
13	12 14 26.51	0.65	1 17 48.2	8.67	1.02	29	12 7 2.36	0.61	1 57 49.9	8.18	0.96
14	12 14 10.99	0.64	1 19 24.2	8.66	1.02	30	12 7 0.43	0.61	1 57 48.0	8.17	0.96
15	12 13 55.63	0.64	N. 1 20 58.9	8.66	1.02	31	12 6 58.87	0.61	N. 1 57 43.6	8.15	0.96
16	12 13 40.45	0.64	1 22 32.1	8.65	1.02	June 1	12 6 57.69	0.61	1 57 36.7	8.14	0.96
17	12 13 25.46	0.64	1 24 3.7	8.65	1.02	2	12 6 56.88	0.61	1 57 27.4	8.12	0.96
18	12 13 10.65	0.64	1 25 33.8	8.64	1.02	3	12 6 56.44	0.60	1 57 15.6	8.11	0.96
19	12 12 56.04	0.64	1 27 2.3	8.64	1.02	4	12 6 56.37	0.60	1 57 1.3	8.09	0.96
20	12 12 41.64	0.64	1 28 29.2	8.63	1.02	5	12 6 56.67	0.60	1 56 44.6	8.08	0.95
21	12 12 27.45	0.64	N. 1 29 54.3	8.62	1.02	6	12 6 57.33	0.60	N. 1 56 25.4	8.07	0.95
22	12 12 13.49	0.64	1 31 17.8	8.61	1.02	7	12 6 58.37	0.60	1 56 3.9	8.06	0.95
23	12 11 59.75	0.64	1 32 39.4	8.60	1.02	8	12 6 59.78	0.60	1 55 39.9	8.05	0.95
24	12 11 46.25	0.64	1 33 59.3	8.59	1.01	9	12 7 1.55	0.60	1 55 13.5	8.04	0.95
25	12 11 32.99	0.64	1 35 17.2	8.58	1.01	10	12 7 3.69	0.60	1 54 44.7	8.02	0.95
26	12 11 19.98	0.64	1 36 33.3	8.57	1.01	11	12 7 6.20	0.60	1 54 13.5	8.01	0.94
27	12 11 7.22	0.64	N. 1 37 47.4	8.56	1.01	12	12 7 9.08	0.60	N. 1 53 40.0	7.99	0.94
28	12 10 54.72	0.64	1 38 59.6	8.55	1.01	13	12 7 12.32	0.59	1 53 4.0	7.98	0.94
29	12 10 42.49	0.64	1 40 9.7	8.54	1.01	14	12 7 15.92	0.59	1 52 25.6	7.97	0.94
30	12 10 30.54	0.64	1 41 17.8	8.53	1.01	15	12 7 19.89	0.59	1 51 44.9	7.95	0.94
May 1	12 10 18.87	0.64	1 42 23.9	8.52	1.01	16	12 7 24.23	0.59	1 51 1.9	7.94	0.94
2	12 10 7.49	0.63	1 43 27.9	8.51	1.00	17	12 7 28.92	0.59	1 50 16.4	7.92	0.93
3	12 9 56.39	0.63	N. 1 44 29.7	8.50	1.00	18	12 7 33.98	0.59	N. 1 49 28.7	7.90	0.93
4	12 9 45.59	0.63	1 45 29.5	8.49	1.00	19	12 7 39.40	0.59	1 48 38.6	7.88	0.93
5	12 9 35.09	0.63	1 46 27.0	8.48	1.00	20	12 7 45.17	0.59	1 47 46.2	7.87	0.93
6	12 9 24.90	0.63	1 47 22.3	8.47	1.00	21	12 7 51.31	0.59	1 46 51.5	7.85	0.93
7	12 9 15.01	0.63	1 48 15.4	8.46	1.00	22	12 7 57.81	0.59	1 45 54.6	7.84	0.93
8	12 9 5.44	0.63	1 49 6.2	8.45	1.00	23	12 8 4.66	0.58	1 44 55.3	7.82	0.92
9	12 8 56.19	0.63	N. 1 49 54.8	8.44	1.00	24	12 8 11.87	0.58	N. 1 43 53.9	7.81	0.92
10	12 8 47.25	0.63	1 50 41.1	8.43	0.99	25	12 8 19.43	0.58	1 42 50.2	7.80	0.92
11	12 8 38.64	0.63	1 51 25.2	8.41	0.99	26	12 8 27.34	0.58	1 41 44.3	7.78	0.92
12	12 8 30.35	0.63	1 52 6.9	8.40	0.99	27	12 8 35.60	0.58	1 40 36.1	7.77	0.92
13	12 8 22.40	0.63	1 52 46.3	8.39	0.99	28	12 8 44.21	0.58	1 39 25.8	7.76	0.92
14	12 8 14.77	0.62	1 53 23.4	8.38	0.99	29	12 8 53.16	0.58	1 38 13.3	7.75	0.91
15	12 8 7.48	0.62	N. 1 53 58.1	8.37	0.99	30	12 9 2.45	0.58	N. 1 36 58.7	7.74	0.91
16	12 8 0.54	0.62	1 54 30.5	8.35	0.99	July 1	12 9 12.08	0.58	1 35 41.9	7.72	0.91
17	12 7 53.93	0.62	1 55 0.4	8.34	0.98	2	12 9 22.05	0.58	1 34 23.0	7.71	0.91
18	12 7 47.67	0.62	N. 1 55 28.0	8.33	0.98	3	12 9 32.35	0.57	N. 1 33 2.1	7.69	0.91

# SATURN, 1922.

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## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Equat. Semid. pass. Merid.	Apparent Declination.	Polar Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Equat. Semid. pass. Merid.	Apparent Declination.	Polar Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
July 4	12 9 42.98	0.57	N. 1 31 39.0	7.63	0.91	July 16	12 12 15.31	0.56	N. 1 12 29.5	7.54	0.89
5	12 9 53.94	0.57	1 30 14.0	7.67	0.91	17	12 12 29.99	0.56	1 10 41.6	7.52	0.89
6	12 10 5.22	0.57	1 28 46.9	7.65	0.90	18	12 12 44.96	0.56	1 8 51.9	7.51	0.89
7	12 10 16.82	0.57	1 27 17.8	7.64	0.90	19	12 13 0.22	0.56	1 7 0.4	7.50	0.89
8	12 10 28.75	0.57	1 25 46.8	7.63	0.90	20	12 13 15.78	0.56	1 5 7.1	7.49	0.88
9	12 10 40.98	0.57	1 24 13.8	7.62	0.90	21	12 13 31.62	0.56	1 3 12.2	7.48	0.88
10	12 10 53.53	0.57	N. 1 22 38.8	7.61	0.90	22	12 13 47.74	0.56	N. 1 1 15.5	7.46	0.88
11	12 11 6.40	0.57	1 21 2.0	7.59	0.90	23	12 14 4.13	0.56	0 59 17.2	7.45	0.88
12	12 11 19.58	0.56	1 19 23.2	7.58	0.90	24	12 14 20.81	0.55	0 57 17.3	7.44	0.88
13	12 11 33.06	0.56	1 17 42.6	7.57	0.89	25	12 14 37.75	0.55	0 55 15.7	7.43	0.88
14	12 11 46.84	0.56	1 16 0.0	7.56	0.89	26	12 14 54.97	0.55	0 53 12.5	7.42	0.88
15	12 12 0.92	0.56	N. 1 14 15.7	7.55	0.89	27	12 15 12.45	0.55	N. 0 51 7.8	7.41	0.88
Dec. 8	13 9 28.53	0.55	S. 4 51 15.0	7.39	0.87	Dec. 21	13 13 6.30	0.56	S. 5 10 13.9	7.53	0.89
9	13 9 47.02	0.55	4 52 54.4	7.40	0.87	22	13 13 20.90	0.56	5 11 27.1	7.54	0.89
10	13 10 5.23	0.55	4 54 32.0	7.41	0.87	23	13 13 35.18	0.57	5 12 38.1	7.56	0.89
11	13 10 23.17	0.56	4 56 7.6	7.42	0.88	24	13 13 49.12	0.57	5 13 46.9	7.57	0.89
12	13 10 40.82	0.56	4 57 41.3	7.43	0.88	25	13 14 2.73	0.57	5 14 53.6	7.58	0.89
13	13 10 58.19	0.56	4 59 13.1	7.44	0.88	26	13 14 16.01	0.57	5 15 58.1	7.59	0.90
14	13 11 15.26	0.56	S. 5 0 42.8	7.45	0.88	27	13 14 28.95	0.57	S. 5 17 0.3	7.60	0.90
15	13 11 32.04	0.56	5 2 10.5	7.46	0.88	28	13 14 41.54	0.57	5 18 0.3	7.62	0.90
16	13 11 48.52	0.56	5 3 36.3	7.47	0.88	29	13 14 53.79	0.57	5 18 58.1	7.63	0.90
17	13 12 4.70	0.56	5 5 0.0	7.48	0.88	30	13 15 5.70	0.57	5 19 53.7	7.65	0.90
18	13 12 20.57	0.56	5 6 21.6	7.50	0.89	31	13 15 17.26	0.57	5 20 47.0	7.66	0.90
19	13 12 36.13	0.56	5 7 41.1	7.51	0.89	32	13 15 28.47	0.57	S. 5 21 37.9	7.67	0.91
20	13 12 51.37	0.56	S. 5 8 58.5	7.52	0.89						

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semid. pass <sup>r</sup> Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass <sup>r</sup> Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
July 22	22 59 6.51	0.12	S. 7 21 52.9	1.8	0.5	Sept. 6	22 53 6.90	0.12	S. 7 59 30.4	1.8	0.5
23	22 59 0.85	0.12	7 22 29.8	1.8	0.5	7	22 52 57.98	0.12	8 0 24.9	1.8	0.5
24	22 58 55.05	0.12	7 23 7.5	1.8	0.5	8	22 52 49.07	0.12	8 1 19.3	1.8	0.5
25	22 58 49.11	0.12	7 23 46.0	1.8	0.5	9	22 52 40.18	0.12	8 2 13.5	1.8	0.5
26	22 58 43.05	0.12	7 24 25.3	1.8	0.5	10	22 52 31.30	0.12	8 3 7.6	1.8	0.5
27	22 58 36.86	0.12	7 25 5.3	1.8	0.5	11	22 52 22.44	0.12	8 4 1.5	1.8	0.5
28	22 58 30.54	0.12	S. 7 25 46.0	1.8	0.5	12	22 52 13.60	0.12	S. 8 4 55.1	1.8	0.5
29	22 58 24.09	0.12	7 26 27.5	1.8	0.5	13	22 52 4.78	0.12	8 5 48.5	1.8	0.5
30	22 58 17.52	0.12	7 27 9.7	1.8	0.5	14	22 51 56.00	0.12	8 6 41.7	1.8	0.5
31	22 58 10.84	0.12	7 27 52.6	1.8	0.5	15	22 51 47.24	0.12	8 7 34.7	1.8	0.5
Aug. 1	22 58 4.04	0.12	7 28 36.1	1.8	0.5	16	22 51 38.53	0.12	8 8 27.3	1.8	0.5
2	22 57 57.12	0.12	7 29 20.3	1.8	0.5	17	22 51 29.86	0.12	8 9 19.6	1.8	0.5
3	22 57 50.10	0.12	S. 7 30 5.2	1.8	0.5	18	22 51 21.24	0.12	S. 8 10 11.6	1.8	0.5
4	22 57 42.97	0.12	7 30 50.7	1.8	0.5	19	22 51 12.67	0.12	8 11 3.1	1.8	0.5
5	22 57 35.73	0.12	7 31 36.7	1.8	0.5	20	22 51 4.15	0.12	8 11 54.3	1.8	0.5
6	22 57 28.39	0.12	7 32 23.4	1.8	0.5	21	22 50 55.68	0.12	8 12 45.1	1.8	0.5
7	22 57 20.95	0.12	7 33 10.6	1.8	0.5	22	22 50 47.28	0.12	8 13 35.4	1.8	0.5
8	22 57 13.42	0.12	7 33 58.3	1.8	0.5	23	22 50 38.95	0.12	8 14 25.3	1.8	0.5
9	22 57 5.79	0.12	S. 7 34 46.7	1.8	0.5	24	22 50 30.68	0.12	S. 8 15 14.7	1.8	0.5
10	22 56 58.06	0.12	7 35 35.5	1.8	0.5	25	22 50 22.49	0.12	8 16 3.7	1.8	0.5
11	22 56 50.25	0.12	7 36 24.8	1.8	0.5	26	22 50 14.36	0.12	8 16 52.1	1.8	0.5
12	22 56 42.35	0.12	7 37 14.5	1.8	0.5	27	22 50 6.32	0.12	8 17 40.0	1.8	0.5
13	22 56 34.37	0.12	7 38 4.8	1.8	0.5	28	22 49 58.37	0.12	8 18 27.3	1.8	0.5
14	22 56 26.31	0.12	7 38 55.4	1.8	0.5	29	22 49 50.50	0.12	8 19 14.0	1.8	0.5
15	22 56 18.18	0.12	S. 7 39 46.4	1.8	0.5	30	22 49 42.71	0.12	S. 8 20 0.2	1.8	0.5
16	22 56 9.98	0.12	7 40 37.9	1.8	0.5	Oct. 1	22 49 35.02	0.12	8 20 45.7	1.8	0.5
17	22 56 1.71	0.12	7 41 29.7	1.8	0.5	2	22 49 27.42	0.12	8 21 30.6	1.8	0.5
18	22 55 53.36	0.12	7 42 21.9	1.8	0.5	3	22 49 19.93	0.12	8 22 14.8	1.8	0.5
19	22 55 44.95	0.12	7 43 14.4	1.8	0.5	4	22 49 12.53	0.12	8 22 58.4	1.8	0.5
20	22 55 36.48	0.12	7 44 7.3	1.8	0.5	5	22 49 5.24	0.12	8 23 41.3	1.8	0.5
21	22 55 27.96	0.12	S. 7 45 0.4	1.8	0.5	6	22 48 58.06	0.12	S. 8 24 23.4	1.8	0.5
22	22 55 19.38	0.12	7 45 53.7	1.8	0.5	7	22 48 50.99	0.12	8 25 4.9	1.8	0.5
23	22 55 10.75	0.12	7 46 47.3	1.8	0.5	8	22 48 44.04	0.12	8 25 45.6	1.8	0.5
24	22 55 2.08	0.12	7 47 41.2	1.8	0.5	9	22 48 37.19	0.12	8 26 25.6	1.8	0.5
25	22 54 53.37	0.12	7 48 35.3	1.8	0.5	10	22 48 30.47	0.12	8 27 4.8	1.8	0.5
26	22 54 44.62	0.12	7 49 29.5	1.8	0.5	11	22 48 23.86	0.12	8 27 43.2	1.8	0.5
27	22 54 35.83	0.12	S. 7 50 23.9	1.8	0.5	12	22 48 17.38	0.12	S. 8 28 20.8	1.8	0.5
28	22 54 27.01	0.12	7 51 18.4	1.8	0.5	13	22 48 11.03	0.12	8 28 57.6	1.8	0.5
29	22 54 18.17	0.12	7 52 12.9	1.8	0.5	14	22 48 4.81	0.12	8 29 33.5	1.8	0.5
30	22 54 9.31	0.12	7 53 7.5	1.8	0.5	15	22 47 58.72	0.12	8 30 8.6	1.8	0.5
31	22 54 0.42	0.12	7 54 2.2	1.8	0.5	16	22 47 52.77	0.12	8 30 42.8	1.8	0.5
Sept. 1	22 53 51.52	0.12	7 54 56.9	1.8	0.5	17	22 47 46.96	0.12	8 31 16.2	1.8	0.5
2	22 53 42.61	0.12	S. 7 55 51.7	1.8	0.5	18	22 47 41.29	0.12	S. 8 31 48.6	1.8	0.5
3	22 53 33.69	0.12	7 56 46.4	1.8	0.5	19	22 47 35.76	0.12	8 32 20.2	1.8	0.5
4	22 53 24.76	0.12	7 57 41.1	1.8	0.5	20	22 47 30.39	0.12	8 32 50.8	1.8	0.5
5	22 53 15.83	0.12	S. 7 58 35.8	1.8	0.5	21	22 47 25.16	0.12	S. 8 33 20.5	1.8	0.5



## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Sid. Time of Semid. pass <sup>r</sup> Merid.	Apparent Declination.	Semidiameter.	Hor. Par.	Date.	Apparent Right Ascension.	Sid. Time of Semid. pass <sup>r</sup> Merid.	Apparent Declination.	Semidiameter.	Hor. Par.
	h m s	s	° ' "	"	"		h m s	s	° ' "	"	"
Oct. 22	22 47 20.08	0.12	S. 8 33 49.2	1.8	0.5	Nov. 27	22 46 12.55	0.12	S. 8 39 10.7	1.7	0.4
23	22 47 15.16	0.12	8 34 16.9	1.8	0.5	28	22 46 14.12	0.12	8 38 58.7	1.7	0.4
24	22 47 10.39	0.12	8 34 43.6	1.8	0.5	29	22 46 15.88	0.12	8 38 45.5	1.7	0.4
25	22 47 5.79	0.12	8 35 9.3	1.8	0.5	30	22 46 17.84	0.12	8 38 31.0	1.7	0.4
26	22 47 1.34	0.12	8 35 34.0	1.8	0.5	Dec. 1	22 46 19.99	0.12	8 38 15.5	1.7	0.4
27	22 46 57.06	0.12	8 35 57.7	1.8	0.5	2	22 46 22.33	0.12	8 37 58.8	1.7	0.4
28	22 46 52.94	0.12	S. 8 36 20.4	1.8	0.5	3	22 46 24.85	0.12	S. 8 37 40.9	1.7	0.4
29	22 46 48.99	0.12	8 36 42.1	1.8	0.5	4	22 46 27.57	0.12	8 37 22.0	1.7	0.4
30	22 46 45.21	0.12	8 37 2.8	1.8	0.5	5	22 46 30.47	0.11	8 37 1.9	1.7	0.4
31	22 46 41.60	0.12	8 37 22.4	1.8	0.5	6	22 46 33.57	0.11	8 36 40.6	1.7	0.4
Nov. 1	22 46 38.16	0.12	8 37 41.0	1.8	0.5	7	22 46 36.84	0.11	8 36 18.2	1.7	0.4
2	22 46 34.89	0.12	8 37 58.4	1.8	0.5	8	22 46 40.30	0.11	8 35 54.8	1.7	0.4
3	22 46 31.79	0.12	S. 8 38 14.8	1.8	0.5	9	22 46 43.95	0.11	S. 8 35 30.2	1.7	0.4
4	22 46 28.87	0.12	8 38 30.1	1.7	0.5	10	22 46 47.78	0.11	8 35 4.4	1.7	0.4
5	22 46 26.12	0.12	8 38 44.3	1.7	0.5	11	22 46 51.80	0.11	8 34 37.6	1.7	0.4
6	22 46 23.55	0.12	8 38 57.4	1.7	0.4	12	22 46 56.00	0.11	8 34 9.6	1.7	0.4
7	22 46 21.16	0.12	8 39 9.4	1.7	0.4	13	22 47 0.39	0.11	8 33 40.5	1.7	0.4
8	22 46 18.96	0.12	8 39 20.4	1.7	0.4	14	22 47 4.96	0.11	8 33 10.3	1.7	0.4
9	22 46 16.93	0.12	S. 8 39 30.2	1.7	0.4	15	22 47 9.71	0.11	S. 8 32 39.1	1.7	0.4
10	22 46 15.08	0.12	8 39 38.8	1.7	0.4	16	22 47 14.65	0.11	8 32 6.8	1.7	0.4
11	22 46 13.42	0.12	8 39 46.4	1.7	0.4	17	22 47 19.76	0.11	8 31 33.4	1.7	0.4
12	22 46 11.95	0.12	8 39 52.8	1.7	0.4	18	22 47 25.06	0.11	8 30 58.9	1.7	0.4
13	22 46 10.66	0.12	8 39 58.1	1.7	0.4	19	22 47 30.53	0.11	8 30 23.3	1.7	0.4
14	22 46 9.56	0.12	8 40 2.2	1.7	0.4	20	22 47 36.17	0.11	8 29 46.7	1.7	0.4
15	22 46 8.65	0.12	S. 8 40 5.2	1.7	0.4	21	22 47 41.99	0.11	S. 8 29 9.1	1.7	0.4
16	22 46 7.92	0.12	8 40 7.1	1.7	0.4	22	22 47 47.98	0.11	8 28 30.4	1.7	0.4
17	22 46 7.38	0.12	8 40 7.8	1.7	0.4	23	22 47 54.15	0.11	8 27 50.7	1.7	0.4
18	22 46 7.04	0.12	8 40 7.3	1.7	0.4	24	22 48 0.48	0.11	8 27 10.0	1.7	0.4
19	22 46 6.88	0.12	8 40 5.7	1.7	0.4	25	22 48 6.98	0.11	8 26 28.2	1.7	0.4
20	22 46 6.92	0.12	8 40 2.9	1.7	0.4	26	22 48 13.65	0.11	8 25 45.5	1.7	0.4
21	22 46 7.14	0.12	S. 8 39 59.0	1.7	0.4	27	22 48 20.48	0.11	S. 8 25 1.8	1.7	0.4
22	22 46 7.56	0.12	8 39 53.8	1.7	0.4	28	22 48 27.48	0.11	8 24 17.1	1.7	0.4
23	22 46 8.18	0.12	8 39 47.5	1.7	0.4	29	22 48 34.64	0.11	8 23 31.4	1.7	0.4
24	22 46 8.98	0.12	8 39 40.1	1.7	0.4	30	22 48 41.96	0.11	8 22 44.8	1.7	0.4
25	22 46 9.98	0.12	8 39 31.5	1.7	0.4	31	22 48 49.43	0.11	8 21 57.2	1.7	0.4
26	22 46 11.17	0.12	S. 8 39 21.7	1.7	0.4	32	22 48 57.06	0.11	S. 8 21 8.7	1.7	0.4

## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.	Date.	Apparent Right Ascension.	Apparent Declination.	Hor. Par.
	h m s	° ' "	"		h m s	° ' "	"
Jan. 1	9 11 48.24	N. 16 18 48.0	0.3	Feb. 16	9 6 57.56	N. 16 40 43.0	0.3
2	9 11 42.98	16 19 12.3	0.3	17	9 6 51.07	16 41 11.9	0.3
3	9 11 37.63	16 19 37.0	0.3	18	9 6 44.62	16 41 40.6	0.3
4	9 11 32.21	16 20 2.0	0.3	19	9 6 38.21	16 42 9.1	0.3
5	9 11 26.70	16 20 27.3	0.3	20	9 6 31.84	16 42 37.5	0.3
6	9 11 21.12	16 20 52.9	0.3	21	9 6 25.52	16 43 5.6	0.3
7	9 11 15.47	N. 16 21 18.8	0.3	22	9 6 19.25	N. 16 43 33.5	0.3
8	9 11 9.74	16 21 45.1	0.3	23	9 6 13.01	16 44 1.2	0.3
9	9 11 3.95	16 22 11.6	0.3	24	9 6 6.83	16 44 28.6	0.3
10	9 10 58.09	16 22 38.4	0.3	25	9 6 0.70	16 44 55.7	0.3
11	9 10 52.17	16 23 5.5	0.3	26	9 5 54.63	16 45 22.6	0.3
12	9 10 46.19	16 23 32.9	0.3	27	9 5 48.62	16 45 49.3	0.3
13	9 10 40.14	N. 16 24 0.5	0.3	28	9 5 42.66	N. 16 46 15.6	0.3
14	9 10 34.04	16 24 28.3	0.3	Mar. 1	9 5 36.77	16 46 41.7	0.3
15	9 10 27.88	16 24 56.4	0.3	2	9 5 30.95	16 47 7.4	0.3
16	9 10 21.67	16 25 24.6	0.3	3	9 5 25.20	16 47 32.8	0.3
17	9 10 15.42	16 25 53.0	0.3	4	9 5 19.51	16 47 57.9	0.3
18	9 10 9.11	16 26 21.7	0.3	5	9 5 13.90	16 48 22.7	0.3
19	9 10 2.76	N. 16 26 50.6	0.3	6	9 5 8.37	N. 16 48 47.2	0.3
20	9 9 56.37	16 27 19.6	0.3	7	9 5 2.90	16 49 11.3	0.3
21	9 9 49.94	16 27 48.8	0.3	8	9 4 57.52	16 49 35.1	0.3
22	9 9 43.46	16 28 18.2	0.3	9	9 4 52.22	16 49 58.5	0.3
23	9 9 36.95	16 28 47.7	0.3	10	9 4 47.01	16 50 21.5	0.3
24	9 9 30.42	16 29 17.3	0.3	11	9 4 41.88	16 50 44.2	0.3
25	9 9 23.85	N. 16 29 47.0	0.3	12	9 4 36.84	N. 16 51 6.4	0.3
26	9 9 17.25	16 30 16.7	0.3	13	9 4 31.89	16 51 28.3	0.3
27	9 9 10.63	16 30 46.6	0.3	14	9 4 27.02	16 51 49.7	0.3
28	9 9 3.99	16 31 16.6	0.3	15	9 4 22.25	16 52 10.7	0.3
29	9 8 57.34	16 31 46.6	0.3	16	9 4 17.57	16 52 31.3	0.3
30	9 8 50.66	16 32 16.6	0.3	17	9 4 12.99	16 52 51.5	0.3
31	9 8 43.97	N. 16 32 46.7	0.3	18	9 4 8.50	N. 16 53 11.3	0.3
Feb. 1	9 8 37.28	16 33 16.8	0.3	19	9 4 4.11	16 53 30.7	0.3
2	9 8 30.57	16 33 46.9	0.3	20	9 3 59.82	16 53 49.6	0.3
3	9 8 23.87	16 34 17.0	0.3	21	9 3 55.63	16 54 8.1	0.3
4	9 8 17.17	16 34 47.1	0.3	22	9 3 51.55	16 54 26.1	0.3
5	9 8 10.46	16 35 17.2	0.3	23	9 3 47.58	16 54 43.6	0.3
6	9 8 3.76	N. 16 35 47.2	0.3	24	9 3 43.71	N. 16 55 0.7	0.3
7	9 7 57.06	16 36 17.2	0.3	25	9 3 39.95	16 55 17.3	0.3
8	9 7 50.37	16 36 47.2	0.3	26	9 3 36.30	16 55 33.4	0.3
9	9 7 43.69	16 37 17.1	0.3	27	9 3 32.76	16 55 49.0	0.3
10	9 7 37.04	16 37 46.8	0.3	28	9 3 29.33	16 56 4.1	0.3
11	9 7 30.40	16 38 16.5	0.3	29	9 3 26.02	16 56 18.8	0.3
12	9 7 23.79	N. 16 38 46.1	0.3	30	9 3 22.83	N. 16 56 32.9	0.3
13	9 7 17.20	16 39 15.5	0.3	31	9 3 19.75	16 56 46.5	0.3
14	9 7 10.63	16 39 44.8	0.3	Apr. 1	9 3 16.80	16 56 59.6	0.3
15	9 7 4.08	N. 16 40 14.0	0.3	2	9 3 13.96	N. 16 57 12.2	0.3

# NEPTUNE, 1922.

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## AT TRANSIT AT GREENWICH.

Date.	Apparent Right Ascension.			Apparent Declination.	Hor. Par.	Date.	Apparent Right Ascension.			Apparent Declination.	Hor. Par.				
	h	m	s	°	'	″		h	m	s	°	'	″		
Apr. 3	9	3	11.25	N. 16	57	24.2	0.3	May 6	9	2	53.25	N. 16	58	55.1	0.3
4	9	3	8.66	16	57	35.7	0.3	7	9	2	54.94	16	58	48.3	0.3
5	9	3	6.18	16	57	46.7	0.3	8	9	2	56.75	16	58	40.9	0.3
6	9	3	3.83	16	57	57.2	0.3	9	9	2	58.69	16	58	33.0	0.3
7	9	3	1.61	16	58	7.2	0.3	10	9	3	0.76	16	58	24.5	0.3
8	9	2	59.51	16	58	16.6	0.3	11	9	3	2.96	16	58	15.5	0.3
9	9	2	57.54	N. 16	58	25.5	0.3	12	9	3	5.29	N. 16	58	6.0	0.3
10	9	2	55.69	16	58	33.8	0.3	13	9	3	7.74	16	57	56.0	0.3
11	9	2	53.96	16	58	41.6	0.3	14	9	3	10.32	16	57	45.4	0.3
12	9	2	52.37	16	58	48.8	0.3	15	9	3	13.03	16	57	34.2	0.3
13	9	2	50.90	16	58	55.5	0.3	16	9	3	15.86	16	57	22.5	0.3
14	9	2	49.56	16	59	1.7	0.3	17	9	3	18.82	16	57	10.3	0.3
15	9	2	48.34	N. 16	59	7.3	0.3	18	9	3	21.90	N. 16	56	57.5	0.3
16	9	2	47.26	16	59	12.4	0.3	19	9	3	25.11	16	56	44.2	0.3
17	9	2	46.30	16	59	16.9	0.3	20	9	3	28.43	16	56	30.4	0.3
18	9	2	45.48	16	59	20.8	0.3	21	9	3	31.88	16	56	16.1	0.3
19	9	2	44.78	16	59	24.2	0.3	22	9	3	35.46	16	56	1.2	0.3
20	9	2	44.22	16	59	27.0	0.3	23	9	3	39.16	16	55	45.8	0.3
21	9	2	43.80	N. 16	59	29.2	0.3	24	9	3	42.98	N. 16	55	29.9	0.3
22	9	2	43.50	16	59	30.9	0.3	25	9	3	46.91	16	55	13.5	0.3
23	9	2	43.34	16	59	32.0	0.3	26	9	3	50.97	16	54	56.5	0.3
24	9	2	43.30	16	59	32.5	0.3	27	9	3	55.13	16	54	39.0	0.3
25	9	2	43.40	16	59	32.5	0.3	28	9	3	59.41	16	54	21.0	0.3
26	9	2	43.63	16	59	32.0	0.3	29	9	4	3.81	16	54	2.6	0.3
27	9	2	43.99	N. 16	59	30.8	0.3	30	9	4	8.32	N. 16	53	43.7	0.3
28	9	2	44.49	16	59	29.1	0.3	31	9	4	12.95	16	53	24.2	0.3
29	9	2	45.12	16	59	26.8	0.3	June 1	9	4	17.69	16	53	4.3	0.3
30	9	2	45.89	16	59	24.0	0.3	2	9	4	22.54	16	52	43.9	0.3
May 1	9	2	46.79	16	59	20.5	0.3	3	9	4	27.50	16	52	23.0	0.3
2	9	2	47.82	16	59	16.5	0.3	4	9	4	32.57	16	52	1.6	0.3
3	9	2	48.98	N. 16	59	12.0	0.3	5	9	4	37.74	N. 16	51	39.8	0.3
4	9	2	50.27	16	59	6.9	0.3	6	9	4	43.02	16	51	17.5	0.3
5	9	2	51.69	N. 16	59	1.3	0.3	7	9	4	48.40	N. 16	50	54.8	0.3

Dec. 27	9	21	15.80	N. 15 40 2.0	0.3	Dec. 30	9	21	1.86	N. 15 41 9.7	0.3
28	9	21	11.25	15 40 24.1	0.3	31	9	20	57.03	15 41 33.0	0.3
29	9	21	6.60	N. 15 40 46.7	0.3	32	9	20	52.11	N. 15 41 56.8	0.3

Date.	X, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Y, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Z, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
	+	+		-	-		-	-	
Jan. 1	0° 1761737	0° 1847733	- 219	0° 8875243	0° 8860472	+ 142	0° 3849233	0° 3842829	- 428
2	1933582	2019278	226	8845009	8828856	136	3836126	3829123	428
3	2104813	2190181	233	8812015	8794487	130	3821822	3814223	428
4	2275374	2360387	240	8776274	8757377	124	3806326	3798133	429
5	2445213	2529845	246	8737799	8717541	117	3789644	3780861	429
6	2614277	2698501	- 253	8696605	8674993	+ 110	3771785	3762416	- 430
7	2782511	2866301	259	8652707	8629750	103	3752754	3742801	430
8	2949865	3033196	265	8606124	8581831	96	3732557	3722024	430
9	3116289	3199137	271	8556873	8531253	88	3711202	3700093	430
10	3281734	3364074	276	8504972	8478034	80	3688697	3677015	430
11	3446151	3527959	- 281	8450440	8422193	+ 72	3665049	3652799	- 430
12	3609493	3690747	287	8393295	8363749	64	3640267	3627453	430
13	3771715	3852392	292	8333556	8302720	55	3614359	3600984	430
14	3932771	4012847	296	8271242	8239125	46	3587331	3573400	430
15	4092615	4172068	301	8206370	8172980	37	3559192	3544708	430
16	4251200	4330006	- 305	8138957	8104304	+ 27	3529949	3514917	- 430
17	4408480	4486616	308	8069022	8033114	18	3499613	3484037	430
18	4564408	4641850	312	7996583	7959430	+ 8	3468190	3452073	429
19	4718935	4795658	316	7921658	7883269	- 2	3435688	3419035	429
20	4872013	4947993	319	7844267	7804654	12	3402116	3384933	428
21	5023593	5098806	- 321	7764432	7723605	- 22	3367486	3349777	- 428
22	5173625	5248045	324	7682176	7640148	33	3331806	3313576	427
23	5322060	5395663	326	7597523	7554305	43	3295088	3276343	427
24	5468848	5541609	328	7510498	7466105	54	3257342	3238088	426
25	5613942	5685839	330	7421130	7375576	65	3218581	3198824	425
26	5757294	5828302	- 331	7329446	7282745	- 76	3178818	3158565	- 424
27	5898857	5968953	332	7235477	7187646	87	3138066	3117322	423
28	6038584	6107745	333	7139255	7090308	98	3096336	3075110	422
29	6176431	6244636	333	7040811	6990767	109	3053645	3031944	421
30	6312354	6379581	333	6940181	6889056	121	3010007	2987837	420
31	6446311	6512539	- 333	6837397	6785209	- 132	2965435	2942804	- 419
Feb. 1	6578259	6643467	333	6732496	6679263	144	2919945	2896861	418
2	6708159	6772329	332	6625514	6571253	155	2873553	2850023	416
3	6835972	6899083	331	6516486	6461217	167	2826274	2802306	415
4	6961658	7023692	329	6405452	6349195	178	2778123	2753727	413
5	7085182	7146122	- 327	6292450	6235222	- 190	2729119	2704302	- 412
6	7206509	7266339	325	6177517	6119338	202	2679277	2654047	410
7	7325607	7384309	323	6060692	6001583	213	2628613	2602978	409
8	7442441	7500000	321	5942015	5881994	225	2577144	2551113	407
9	7556982	7613384	318	5821525	5760612	237	2524886	2498466	405
10	7669201	7724430	- 314	5699259	5637472	- 248	2471856	2445057	- 403
11	7779068	7833111	311	5575254	5512611	260	2418071	2390900	401
12	7886555	7939397	307	5449546	5386065	271	2363546	2336011	399
13	7991634	8043261	303	5322171	5257870	283	2308297	2280406	397
14	8094275	8144672	299	5193166	5128064	294	2252340	2224101	395
15	8194448	8243600	- 294	5062567	4996681	- 305	2195691	2167112	- 393
	+	+		-	-		-	-	

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Date.	X, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Y, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Z, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
	+	+		-	-		-	-	
Feb. 16	0° 8292124	0° 8340016	- 289	0° 4930410	0° 4863759	- 317	0° 2138366	0° 2109455	- 390
17	837272	8433889	284	4796733	4729337	328	2080382	2051149	388
18	8479862	8525188	278	4661575	4593453	339	2021758	1992210	385
19	8569864	8613885	273	4524976	4456149	350	1962509	1932657	383
20	8657248	8699950	267	4386978	4317467	361	1902655	1872506	380
21	0° 8741987	0° 8783355	- 260	0° 4247622	0° 4177449	- 372	0° 1842213	0° 1811778	- 377
22	8824052	8864074	254	4106954	4036141	383	1781204	1750492	375
23	8903418	8942080	247	3965017	3893587	394	1719646	1688667	372
24	8980058	9017349	240	3821858	3749834	404	1657559	1626323	369
25	9053950	9089858	233	3677522	3604928	414	1594963	1563480	366
26	0° 9125071	0° 9159585	- 225	0° 3532057	0° 3458915	- 425	0° 1531878	0° 1500159	- 363
27	9193399	9226509	217	3385509	3311844	435	1468325	1436379	359
28	9258914	9290610	210	3237927	3163764	445	1404324	1372162	356
Mar. 1	9321597	9351872	202	3089361	3014723	455	1339895	1307527	353
2	9381433	9410278	193	2939856	2864767	465	1275060	1242497	349
3	0° 9438406	0° 9465814	- 184	0° 2789464	0° 2713951	- 474	0° 1209840	0° 1177092	- 346
4	9492501	9518466	176	2638234	2562320	484	1144256	1111334	342
5	9543707	9568223	167	2486214	2409923	493	1078328	1045242	338
6	9592012	9615074	158	2333453	2256810	502	1012078	0978838	335
7	9637407	9659011	148	2180001	2103031	511	0945526	0912143	331
8	0° 9679885	0° 9700028	- 138	0° 2025906	0° 1948632	- 520	0° 0878693	0° 0845178	- 327
9	9719439	9738118	129	1871215	1793660	528	0811600	0777963	323
10	9756063	9773275	119	1715974	1638162	537	0744268	0710517	319
11	9789754	9805498	109	1560229	1482181	545	0676714	0642861	314
12	9820507	9834780	98	1404024	1325763	553	0608960	0575014	310
13	0° 9848317	0° 9861117	- 88	0° 1247403	0° 1168950	- 561	0° 0541025	0° 0506995	- 306
14	9873180	9884505	77	1090409	1011785	569	0472927	0438824	301
15	9895091	9904937	67	0933084	0854311	577	0404687	0370519	297
16	9914043	9922408	56	0775472	0696572	584	0336322	0302098	292
17	9930032	9936913	45	0617617	0538612	591	0267851	0233583	288
18	0° 9943051	0° 9948445	- 33	0° 0459564	0° 0380477	- 598	0° 0199297	0° 0164994	- 283
19	9953095	9957000	22	0301358	0222213	605	0130678	0096350	278
20	9960161	9962576	- 11	0143047	0063867	612	0062014	0027672	273
21	9964246	9965169	+ 1	0015321	0094512	619	0006673	0041019	268
22	9965346	9964777	13	0173699	0252877	625	0075363	0109702	263
23	0° 9963461	0° 9961399	+ 25	0° 0332039	0° 0411179	- 631	0° 0144034	0° 0178357	- 258
24	9958592	9955039	37	0490290	0569368	637	0212667	0246962	253
25	9950741	9945698	49	0648405	0727395	643	0281238	0315494	247
26	9939911	9933381	61	0806333	0885212	649	0349727	0383934	242
27	9926108	9918093	73	0964025	1042767	654	0418113	0452261	236
28	0° 9909337	0° 9899840	+ 86	0° 1121432	0° 1200013	- 659	0° 0486376	0° 0520454	- 231
29	9889604	9878629	99	1278505	1356900	664	0554494	0588492	225
30	9866918	9854472	111	1435193	1513378	669	0622445	0656351	219
31	9841292	9827379	124	1591448	1669398	674	0690208	0724013	214
Apr. 1	9812736	9797364	137	1747221	1824912	678	0757764	0791457	208
2	0° 9781264	0° 9764439	+ 150	0° 1902465	0° 1979873	- 683	0° 0825090	0° 0858661	- 202
	+	+		+	+		+	+	

Date.	X, True Eq <sup>a</sup> of Date.		Red. to M. Eq <sup>a</sup> of 1922-0	Y, True Eq <sup>a</sup> of Date.		Red. to M. Eq <sup>a</sup> of 1922-0	Z, True Eq <sup>a</sup> of Date.		Red. to M. Eq <sup>a</sup> of 1922-0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Apr. 3	+	+		+	+		+	+	
	0° 9746890	0° 9728620	+ 163	0° 2057130	0° 2134231	- 687	0° 0892167	0° 0925606	- 196
	4	° 9709630	176	° 2211171	° 2287944	691	° 0958976	° 0992273	190
	5	° 9669503	189	° 2364543	° 2440964	694	° 1025496	° 1058642	183
	6	° 9626526	203	° 2517201	° 2593249	698	° 1091708	° 1124693	177
	7	° 9580719	216	° 2669102	° 2744755	701	° 1157593	° 1190407	171
	8	0° 9532099	+ 229	0° 2820204	0° 2895443	- 704	0° 1223133	0° 1255768	- 164
	9	° 9480689	243	° 2970468	° 3045273	707	° 1288311	° 1320759	158
	10	° 9426507	257	° 3119854	° 3194205	710	° 1353109	° 1385359	151
	11	° 9369571	271	° 3268322	° 3342200	713	° 1417508	° 1449553	145
	12	° 9309901	284	° 3415834	° 3489220	715	° 1481492	° 1513323	138
	13	0° 9247512	+ 298	0° 3562353	0° 3635228	- 717	0° 1545045	0° 1576655	- 131
	14	° 9182424	312	° 3707839	° 3780182	719	° 1608150	° 1639529	124
	15	° 9114655	326	° 3852252	° 3924044	721	° 1670788	° 1701926	117
	16	° 9044221	340	° 3995553	° 4066773	722	° 1732941	° 1763831	110
	17	° 8971142	354	° 4137700	° 4208329	724	° 1794593	° 1825226	103
	18	0° 8895439	+ 369	0° 4278654	0° 4348670	- 725	0° 1855726	0° 1886091	- 96
	19	° 8817132	383	° 4418372	° 4487754	726	° 1916320	° 1946410	89
May 1	20	° 8736243	397	° 4556812	° 4625540	726	° 1976359	° 2006165	82
	21	° 8652797	412	° 4693934	° 4761987	727	° 2035826	° 2065339	74
	22	° 8566817	426	° 4829695	° 4897053	727	° 2094701	° 2123912	67
	23	0° 8478330	+ 441	0° 4964056	0° 5030699	- 727	0° 2152968	0° 2181868	- 59
	24	° 8387363	455	° 5096976	° 5162883	727	° 2210609	° 2239190	52
	25	° 8293944	470	° 5228414	° 5293565	726	° 2267608	° 2295861	44
	26	° 8198101	485	° 5358330	° 5422705	725	° 2323947	° 2351863	37
	27	° 8099865	499	° 5486685	° 5550265	724	° 2379608	° 2407180	29
	28	0° 7999269	+ 514	0° 5613440	0° 5676205	- 723	0° 2434577	0° 2461797	- 21
	29	° 7896346	529	° 5738556	° 5800489	722	° 2488837	° 2515695	13
	30	° 7791131	544	° 5861998	° 5923080	720	° 2542370	° 2568860	- 6
	1	° 7683658	559	° 5983729	° 6043941	718	° 2595163	° 2621278	+ 2
	2	° 7573965	573	° 6103713	° 6163040	716	° 2647202	° 2672933	10
	3	0° 7462089	+ 588	0° 6221919	0° 6280345	- 713	0° 2698470	0° 2723811	+ 18
	4	° 7348068	603	° 6338315	° 6395825	711	° 2748955	° 2773899	27
	5	° 7231939	618	° 6452871	° 6509450	708	° 2798643	° 2823184	35
	6	° 7113741	633	° 6565558	° 6621192	704	° 2847522	° 2871654	43
	7	° 6993511	648	° 6676348	° 6731023	701	° 2895579	° 2919295	51
	8	0° 6871285	+ 663	0° 6785215	0° 6838919	- 697	0° 2942802	0° 2966097	+ 59
	9	° 6747101	678	° 6892133	° 6944854	693	° 2989180	° 3012048	67
	10	° 6620994	693	° 6997078	° 7048803	689	° 3034701	° 3057137	76
	11	° 6492998	708	° 7100024	° 7150739	684	° 3079355	° 3101353	84
	12	° 6363150	723	° 7200944	° 7250637	679	° 3123129	° 3144683	93
	13	0° 6231483	+ 738	0° 7299814	0° 7348472	- 674	0° 3166012	0° 3187116	+ 101
	14	° 6098032	753	° 7396607	° 7444217	668	° 3207993	° 3228642	109
	15	° 5962833	768	° 7491297	° 7537845	662	° 3249060	° 3269247	118
	16	° 5825922	782	° 7583857	° 7629330	656	° 3289201	° 3308921	127
	17	° 5687336	797	° 7674260	° 7718644	649	° 3328405	° 3347653	135
	18	0° 5547114	+ 812	0° 7762479	0° 7805762	- 642	0° 3366662	0° 3385432	+ 144
	+	+		+	+		+	+	

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Date.	X, True Eq <sup>a</sup> of Date.		Red. to M. Eq <sup>a</sup> of 1922-0	Y, True Eq <sup>a</sup> of Date.		Red. to M. Eq <sup>a</sup> of 1922-0	Z, True Eq <sup>a</sup> of Date.		Red. to M. Eq <sup>a</sup> of 1922-0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
	+	+		+	+		+	+	
May 19	0°5405295	0°5333799	+ 827	0°7848489	0°7890657	- 635	0°3403960	0°3422246	+ 152
20	5261919	5189659	841	7932263	7973304	628	3440287	3458083	161
21	5117026	5044025	856	8013777	8053678	620	3475632	3492934	170
22	4970660	4896937	870	8093005	8131754	612	3509986	3526788	178
23	4822862	4748439	885	8169923	8207509	603	3543338	3559636	187
24	0°4673675	0°4598575	+ 899	0°8244509	0°8280919	- 595	0°3575679	0°3591467	+ 196
25	4523145	4447390	913	8316738	8351962	585	3606999	3622273	204
26	4371317	4294931	928	8386589	8420616	576	3637288	3652043	213
27	4218238	4141244	942	8454040	8486859	566	3666538	3680771	222
28	4063955	3986377	956	8519072	8550676	556	3694741	3708447	231
29	0°3908517	0°3830380	+ 969	0°8581668	0°8612047	- 545	0°3721888	0°3735064	+ 239
30	3751972	3673299	983	8641811	8670957	534	3747973	3760615	248
31	3594369	3515187	996	8699485	8727392	523	3772989	3785095	257
June 1	3435758	3356089	1010	8754677	8781339	511	3796931	3808497	266
2	3276186	3196055	1023	8807376	8832787	499	3819792	3830816	274
3	0°3115702	0°3035132	+ 1036	0°8857572	0°8881728	- 487	0°3841568	0°3852048	+ 283
4	2954352	2873367	1049	8905255	8928152	475	3862255	3872189	292
5	2792182	2710804	1062	8950417	8972050	462	3881849	3891235	301
6	2629238	2547489	1074	8993049	9013414	448	3900345	3909180	309
7	2465564	2383468	1086	9033144	9052238	434	3917739	3926023	318
8	0°2301205	0°2218781	+ 1098	0°9070696	0°9088516	- 420	0°3934030	0°3941760	+ 327
9	2136202	2053473	1110	9105696	9122236	406	3949213	3956387	335
10	1970599	1887586	1122	9138136	9153394	391	3963283	3969901	344
11	1804439	1721164	1133	9168009	9181980	376	3976239	3982298	353
12	1637766	1554250	1144	9195306	9207986	361	3988077	3993575	362
13	0°1470623	0°1386890	+ 1155	0°9220019	0°9231404	- 345	0°3998792	0°4003727	+ 370
14	1303056	1219127	1166	9242139	9252224	328	4008381	4012752	379
15	1135109	1051007	1176	9261658	9270440	312	4016841	4020647	387
16	0966828	0886577	1186	9278570	9286047	295	4024170	4027409	396
17	0798261	0713884	1196	9292869	9299035	278	4030365	4033036	404
18	0°0629454	0°0544976	+ 1205	0°9304546	0°9309400	- 260	0°4035423	0°4037525	+ 413
19	0460455	0375898	1214	9313597	9317137	243	4039341	4040873	421
20	0291311	0206700	1223	9320018	9322240	224	4042119	4043080	429
21	0122072	0037432	1231	9323803	9324706	206	4043756	4044146	438
22	0047213	0131857	1239	9324950	9324533	187	4044249	4044067	446
23	0°0216493	0°0301116	+ 1247	0°9323456	0°9321718	- 168	0°4043598	0°4042843	+ 454
24	0385718	0470294	1254	9319320	9316261	149	4041802	4040475	462
25	0554836	0639339	1261	9312542	9308163	129	4038862	4036964	471
26	0723796	0808200	1268	9303125	9297427	109	4034780	4032311	479
27	0892546	0976826	1274	9291071	9284057	89	4029556	4026516	487
28	0°1061034	0°1145163	+ 1280	0°9276387	0°9268061	- 68	0°4023192	0°4019584	+ 495
29	1229208	1313163	1286	9259080	9249446	47	4015692	4011516	503
30	1397021	1480776	1291	9239159	9228221	26	4007058	4002317	510
July 1	1564423	1647955	1295	9216633	9204396	- 5	3997295	3991992	518
2	1731367	1814652	1299	9191512	9177982	+ 17	3986408	3980544	526
3	0°1897806	0°1980823	+ 1303	0°9163807	0°9148990	+ 39	0°3974400	0°3967977	+ 533
	-	-		+	+		+	+	

Date.	X, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Y, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Z, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	
	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	Noon.	Midnight.	Noon.	
July	4	0°2063697	0°2146422	+1306	0°9133531	0°9117432	+ 61	0°3961275	0°3954296	+ 541
	5	2228994	2311407	1309	9100695	9083320	83	3947039	3939506	548
	6	2393655	2475733	1312	9065309	9046664	105	3931697	3923612	556
	7	2557636	2639359	1314	9027386	9007476	128	3915252	3906617	563
	8	2720896	2802242	1315	8986936	8965767	151	3897709	3888527	570
	9	0°2883392	0°2964340	+1316	0°8943970	0°8921547	+ 174	0°3879073	0°3869348	+ 577
	10	3045081	3125610	1317	8898500	8874829	197	3859351	3849083	584
	11	3205921	3286009	1317	8850536	8825622	220	3838545	3827737	591
	12	3365869	3445495	1317	8800088	8773936	244	3816661	3805317	598
	13	3524881	3604022	1316	8747168	8719786	268	3793705	3781826	605
	14	0°3682913	0°3761549	+1314	0°8691790	0°8663182	+ 292	0°3769681	0°3757270	+ 612
	15	3839923	3918030	1312	8633964	8604137	315	3744595	3731656	618
	16	3995865	4073422	1310	8573704	8542666	339	3718454	3704990	625
	17	4150695	4227679	1307	8511024	8478781	364	3691264	3677277	631
	18	4304368	4380757	1304	8445938	8412498	388	3663031	3648526	638
	19	0°4456840	0°4532611	+1300	0°8378462	0°8343832	+ 412	0°3633763	0°3618743	+ 644
	20	4608065	4683196	1295	8308611	8272801	437	3603466	3587934	650
	21	4757997	4832464	1290	8236403	8199420	461	3572147	3556107	656
22	4906590	4980370	1284	8161855	8123710	485	3539815	3523272	661	
23	5053798	5126868	1278	8084987	8045690	510	3506479	3489437	667	
24	0°5199574	0°5271911	+1272	0°8005821	0°7965383	+ 534	0°3472147	0°3454611	+ 673	
25	5343874	5415456	1265	7924379	7882813	559	3436830	3418806	678	
26	5486651	5557454	1257	7840687	7798006	583	3400539	3382032	683	
27	5627861	5697866	1249	7754772	7710989	608	3363285	3344300	689	
28	5767464	5836649	1240	7666660	7621789	632	3325078	3305622	694	
29	0°5905418	0°5973765	+1231	0°7576380	0°7530437	+ 656	0°3285932	0°3266010	+ 699	
30	6041685	6109174	1221	7483963	7436961	681	3245858	3225477	703	
31	6176228	6242841	1211	7389436	7341390	705	3204868	3184034	708	
Aug.	1	6309009	6374728	1200	7292828	7243753	729	3162975	3141693	713
	2	6439994	6504802	1189	7194168	7144078	753	3120190	3098467	717
	3	0°6569149	0°6633030	+1177	0°7093486	0°7042395	+ 777	0°3076526	0°3054369	+ 721
	4	6696440	6759377	1164	6990809	6938732	801	3031996	3009410	725
	5	6821835	6883810	1151	6886166	6833116	824	2986611	2963602	729
	6	6945299	7006297	1138	6779584	6725575	848	2940384	2916958	733
	7	7066800	7126804	1124	6671091	6616137	871	2893326	2869490	737
	8	0°7186306	0°7245300	+1110	0°6560716	0°6504831	+ 894	0°2845451	0°2821211	+ 740
	9	7303782	7361750	1095	6448486	6391684	917	2796771	2772133	743
	10	7419198	7476122	1079	6334428	6276723	940	2747298	2722268	747
	11	7532518	7588382	1063	6218573	6159981	963	2697045	2671630	750
	12	7643710	7698498	1047	6100950	6041484	985	2646025	2620231	752
	13	0°7752742	0°7806438	+1030	0°5981587	0°5921264	+1007	0°2594250	0°2568085	+ 755
	14	7859581	7912167	1013	5860517	5799351	1029	2541736	2515206	758
	15	7964193	8015654	995	5737769	5675775	1051	2488495	2461606	760
	16	8066546	8116865	976	5613374	5550570	1073	2434541	2407301	762
	17	8166607	8215767	957	5487366	5423767	1094	2379888	2352304	764
	18	0°8264342	0°8312327	+ 938	0°5359778	0°5295402	+1115	0°2324551	0°2296631	+ 766
	—	—		+	+		+	+		



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Date.	X, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Y, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Z, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0.
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
	—	—		+	+		+	+	
Aug. 19	0° 8359719	0° 8406513	+ 919	0° 5230644	0° 5165508	+ 1135	0° 2268546	0° 2240298	+ 768
20	8452706	8498292	898	5099999	5034122	1155	2211888	2183319	769
21	8543269	8587633	878	4967881	4901282	1175	2154592	2125710	770
22	8631379	8674504	857	4834329	4767028	1195	2096675	2067489	772
23	8717004	8758875	835	4699384	4631402	1215	2038155	2008674	773
24	0° 8800114	0° 8840719	+ 813	0° 4563087	0° 4494445	+ 1234	0° 1979049	0° 1949282	+ 773
25	8880686	8920012	791	4425480	4356199	1252	1919376	1889332	774
26	8958693	8996728	769	4286606	4216708	1271	1859153	1828841	774
27	9034113	9070846	746	4146510	4076017	1289	1798399	1767828	775
28	9106925	9142347	722	4005235	3934168	1306	1737132	1706312	775
29	0° 9177110	0° 9211212	+ 698	0° 3862821	0° 3791201	+ 1323	0° 1675371	0° 1644311	+ 774
30	9244650	9277422	674	3719312	3647160	1340	1613133	1581841	774
31	9309527	9340962	650	3574749	3502084	1357	1550436	1518920	774
Sept. 1	9371724	9401812	625	3429171	3356015	1373	1487296	1455567	773
2	9431225	9459960	600	3282620	3208992	1388	1423734	1391800	772
3	0° 9488014	0° 9515386	+ 574	0° 3135136	0° 3061057	+ 1404	0° 1359766	0° 1327635	+ 771
4	9542074	9568076	548	2986759	2912248	1419	1295409	1263090	769
5	9593391	9618017	522	2837529	2762606	1433	1230680	1198182	768
6	9641951	9665191	496	2687484	2612169	1447	1165598	1132930	766
7	9687735	9709583	469	2536666	2460979	1461	1100180	1067351	764
8	0° 9730731	0° 9751178	+ 442	0° 2385114	0° 2309076	+ 1474	0° 1034444	0° 1001462	+ 762
9	9770923	9789963	415	2232870	2156501	1486	0968408	0935283	760
10	9808297	9825922	388	2079973	2003293	1499	0902089	0868829	757
11	9842838	9859042	360	1926465	1849495	1511	0835506	0802121	754
12	9874533	9889309	332	1772389	1695151	1522	0768677	0735177	751
13	0° 9903368	0° 9916709	+ 304	0° 1617786	0° 1540300	+ 1533	0° 0701622	0° 0668015	+ 748
14	9929329	9941228	275	1462698	1384986	1543	0634358	0600654	745
15	9952403	9962854	246	1307169	1229253	1553	0566904	0533112	742
16	9972578	9981574	217	1151243	1073146	1563	0499279	0465409	738
17	0° 9989841	0° 9997377	188	0994967	0916712	1572	0431503	0397565	734
18	1° 0004181	1° 0010252	+ 159	0° 0838386	0° 0759996	+ 1581	0° 0363598	0° 0329603	+ 730
19	0015588	0020188	130	0681548	0603048	1589	0295583	0261540	725
20	0024052	0027179	100	0524503	0445918	1597	0227478	0193399	721
21	0029568	0031218	70	0367301	0288657	1604	0159305	0125199	716
22	0032130	0032303	40	0209992	0131313	1611	0091085	0056965	711
23	1° 0031736	1° 0030430	+ 10	0° 0052626	0° 0026062	+ 1617	0° 0022841	0° 0011283	+ 706
24	0028386	0025603	— 20	0104746	0183419	1623	0045406	0079524	700
25	0022082	0017823	51	0262075	0340708	1628	0113636	0147738	695
26	0012827	1° 0007093	81	0419312	0497881	1633	0181828	0215904	689
27	1° 0000623	0° 9993418	111	0576410	0654893	1637	0249962	0284001	683
28	0° 9985478	0° 9976804	— 142	0° 0733323	0° 0811696	+ 1641	0° 0318017	0° 0352009	+ 677
29	9967397	9957257	173	0890005	0968245	1644	0385973	0419908	670
30	9946386	9934784	204	1046411	1124496	1647	0453810	0487678	664
Oct. 1	9922451	9909389	234	1202495	1280404	1650	0521510	0555303	657
2	9895598	9881080	265	1358217	1435927	1652	0589054	0622761	650
3	0° 9865835	0° 9849864	— 296	0° 1513530	0° 1591019	+ 1653	0° 0656421	0° 0690033	+ 643

Date.	X, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Y, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Z, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Oct. 4	0° 9833169	0° 9815749	— 327	0° 1668390	0° 1745638	+ 1654	0° 0723593	0° 0757099	+ 635
5	° 9797607	° 9778743	358	° 1822756	° 1899740	1655	° 0790549	° 0823941	627
6	° 9759158	° 9738854	389	° 1976583	° 2053281	1655	° 0857272	° 0890540	619
7	° 9717831	° 9696090	421	° 2129829	° 2206220	1654	° 0923743	° 0956877	611
8	° 9673633	° 9650461	452	° 2282450	° 2358513	1653	° 0989941	° 1022933	603
9	0° 9626574	0° 9601974	— 483	0° 2434404	0° 2510116	+ 1652	0° 1055849	0° 1088688	+ 595
10	° 9576663	° 9550641	514	° 2585645	° 2660985	1650	° 1121447	° 1154123	586
11	° 9523909	° 9496470	545	° 2736130	° 2811075	1647	° 1186715	° 1219220	577
12	° 9468324	° 9439473	576	° 2885815	° 2960344	1645	° 1251635	° 1283959	568
13	° 9409917	° 9379659	607	° 3034656	° 3108746	1641	° 1316188	° 1348320	559
14	0° 9348699	0° 9317040	— 639	0° 3182608	0° 3256236	+ 1637	0° 1380353	0° 1412284	+ 549
15	° 9284683	° 9251630	670	° 3329624	° 3402767	1633	° 1444110	° 1475830	540
16	° 9217882	° 9183441	701	° 3475658	° 3548292	1628	° 1507440	° 1538939	530
17	° 9148309	° 9112489	732	° 3620663	° 3692764	1623	° 1570323	° 1601590	520
18	° 9075983	° 9038792	762	° 3764590	° 3836134	1617	° 1632738	° 1663763	510
19	0° 9000920	0° 8962369	— 793	0° 3907391	0° 3978354	+ 1611	0° 1694664	0° 1725437	+ 499
20	° 8923142	° 8883241	824	° 4049018	° 4119376	1604	° 1756081	° 1786593	489
21	° 8842670	° 8801431	855	° 4189423	° 4259153	1597	° 1816970	° 1847209	478
22	° 8759529	° 8716966	885	° 4328559	° 4397637	1589	° 1877309	° 1907266	467
23	° 8673746	° 8629872	916	° 4466380	° 4534784	1581	° 1937079	° 1966745	456
24	0° 8585347	0° 8540176	— 946	0° 4602842	0° 4670550	+ 1572	0° 1996261	0° 2025626	+ 444
25	° 8494363	° 8447910	977	° 4737903	° 4804895	1563	° 2054837	° 2083892	433
26	° 8400822	° 8353102	1007	° 4871521	° 4937776	1553	° 2112789	° 2141525	421
27	° 8304754	° 8255782	1037	° 5003656	° 5069155	1543	° 2170099	° 2198508	409
28	° 8206189	° 8155979	1067	° 5134269	° 5198993	1532	° 2226750	° 2254823	397
29	0° 8105157	0° 8053725	— 1096	0° 5263321	0° 5327250	+ 1521	0° 2282725	0° 2310454	+ 385
30	° 8001688	° 7949049	1126	° 5390774	° 5453890	1510	° 2338008	° 2365385	373
31	° 7895813	° 7841983	1156	° 5516592	° 5578876	1498	° 2392582	° 2419598	361
Nov. 1	° 7787562	° 7732555	1185	° 5640738	° 5702172	1485	° 2446430	° 2473077	348
2	° 7676966	° 7620799	1214	° 5763175	° 5823742	1472	° 2499538	° 2525810	335
3	0° 7564057	0° 7506745	— 1243	0° 5883869	0° 5943551	+ 1458	0° 2551890	0° 2577777	+ 322
4	° 7448866	° 7390425	1272	° 6002784	° 6061563	1444	° 2603469	° 2628964	309
5	° 7331426	° 7271872	1301	° 6119885	° 6177744	1430	° 2654260	° 2679356	296
6	° 7211767	° 7151116	1329	° 6235137	° 6292059	1415	° 2704249	° 2728937	282
7	° 7089922	° 7028189	1357	° 6348506	° 6404474	1399	° 2753419	° 2777693	269
8	0° 6965922	0° 6903126	— 1385	0° 6459959	0° 6514955	+ 1383	0° 2801756	0° 2825607	+ 255
9	° 6839803	° 6775957	1413	° 6569459	° 6623467	1366	° 2849245	° 2872667	241
10	° 6711594	° 6646718	1440	° 6676973	° 6729974	1349	° 2895871	° 2918856	227
11	° 6581333	° 6515443	1468	° 6782464	° 6834440	1332	° 2941619	° 2964159	213
12	° 6449052	° 6382166	1495	° 6885898	° 6936833	1314	° 2986473	° 3008560	199
13	0° 6314788	0° 6246924	— 1522	0° 6987240	0° 7037115	+ 1295	0° 3030418	0° 3052045	+ 185
14	° 6178579	° 6109756	1548	° 7086453	° 7135250	1277	° 3073439	° 3094599	171
15	° 6040462	° 5970701	1574	° 7183502	° 7231204	1256	° 3115522	° 3136207	156
16	° 5900479	° 5829801	1600	° 7278352	° 7324941	1236	° 3156651	° 3176853	141
17	° 5758673	° 5687100	1626	° 7370968	° 7416427	1216	° 3196812	° 3216525	126
18	0° 5615087	0° 5542640	— 1652	0° 7461315	0° 7505628	+ 1195	0° 3235990	0° 3255206	+ 111

# SUN'S CO-ORDINATES, 1922.

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Date.	X, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Y, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0	Z, True Eq <sup>s</sup> of Date.		Red. to M. Eq <sup>s</sup> of 1922-0
	Noon.	Midnight.		Noon.	Midnight.		Noon.	Midnight.	
Nov. 19	0° 5469766	0° 5396471	-1677	0° 7549362	0° 7592514	+1173	0° 3274172	0° 3292885	+ 96
20	° 5322760	° 5248639	1701	° 7635079	° 7677054	1151	° 3311344	° 3329547	81
21	° 5174115	° 5099194	1726	° 7718435	° 7759220	1128	° 3347494	° 3365182	66
22	° 5023881	° 4948184	1750	° 7799404	° 7838985	1105	° 3382611	° 3399778	51
23	° 4872108	° 4795659	1774	° 7877960	° 7916326	1081	° 3416683	° 3433324	36
24	0° 4718844	0° 4641669	-1797	0° 7954080	0° 7991220	+1057	0° 3449699	0° 3465808	+ 20
25	° 4564139	° 4486261	1820	° 8027742	° 8063644	1033	° 3481650	° 3497223	+ 5
26	° 4408041	° 4329485	1842	° 8098924	° 8133578	1008	° 3512526	° 3527559	- 11
27	° 4250598	° 4171388	1864	° 8167605	° 8201001	982	° 3542319	° 3556806	27
28	° 4091860	° 4012021	1886	° 8233764	° 8265893	956	° 3571018	° 3584955	42
29	0° 3931875	0° 3851429	-1908	0° 8297385	0° 8328238	+ 929	0° 3598616	0° 3612000	- 58
30	° 3770690	° 3689664	1929	° 8358449	° 8388016	902	° 3625105	° 3637930	74
Dec. 1	° 3608356	° 3526772	1949	° 8416938	° 8445212	874	° 3650476	° 3662741	90
2	° 3444919	° 3362802	1969	° 8472835	° 8499806	847	° 3674723	° 3686422	106
3	° 3280428	° 3197802	1988	° 8526124	° 8551786	818	° 3697838	° 3708968	122
4	0° 3114931	0° 3031820	-2007	0° 8576791	0° 8601135	+ 789	0° 3719813	0° 3730372	- 138
5	° 2948476	° 2864903	2026	° 8624818	° 8647838	759	° 3740643	° 3750627	154
6	° 2781109	° 2697099	2044	° 8670193	° 8691881	729	° 3760321	° 3769725	170
7	° 2612880	° 2528456	2062	° 8712899	° 8733246	699	° 3778839	° 3787662	186
8	° 2443835	° 2359022	2079	° 8752921	° 8771922	668	° 3796193	° 3804431	202
9	0° 2274024	0° 2188846	-2095	0° 8790246	0° 8807892	+ 637	0° 3812375	0° 3820025	- 219
10	° 2103494	° 2017976	2111	° 8824857	° 8841140	605	° 3827379	° 3834438	235
11	° 1932297	° 1846464	2127	° 8856740	° 8871654	573	° 3841200	° 3847664	251
12	° 1760484	° 1674363	2141	° 8885880	° 8899417	540	° 3853830	° 3859697	267
13	° 1588108	° 1501725	2156	° 8912263	° 8924417	507	° 3865265	° 3870533	283
14	0° 1415222	0° 1328604	-2169	0° 8935877	0° 8946642	+ 474	0° 3875500	0° 3880166	- 300
15	° 1241880	° 1155056	2182	° 8956710	° 8966080	439	° 3884529	° 3888590	316
16	° 1068140	° 0981138	2195	° 8974750	° 8982720	405	° 3892348	° 3895803	332
17	° 0894058	° 0806907	2206	° 8989988	° 8996554	370	° 3898954	° 3901801	348
18	° 0719693	° 0632423	2217	° 9002417	° 9007577	335	° 3904344	° 3906582	364
19	0° 0545104	0° 0457743	-2228	0° 9012034	0° 9015786	+ 300	0° 3908515	0° 3910143	- 380
20	° 0370347	° 0282924	2238	° 9018834	° 9021177	264	° 3911466	° 3912484	396
21	° 0195481	° 0108026	2247	° 9022816	° 9023750	228	° 3913197	° 3913604	412
22	° 0020565	° 0066895	2255	° 9023979	° 9023505	191	° 3913706	° 3913502	428
23	° 0154346	° 0241782	2263	° 9022327	° 9020446	154	° 3912994	° 3912181	444
24	0° 0329196	0° 0416581	-2270	0° 9017862	0° 9014576	+ 117	0° 3911064	0° 3909642	- 460
25	° 0503930	° 0591236	2276	° 9010588	° 9005899	79	° 3907915	° 3905884	476
26	° 0678492	° 0765692	2282	° 9000509	° 8994420	41	° 3903549	° 3900911	491
27	° 0852828	° 0939894	2286	° 8987631	° 8980144	+ 3	° 3897970	° 3894726	507
28	° 1026884	° 1113791	2290	° 8971960	° 8963079	- 35	° 3891180	° 3887331	523
29	0° 1200608	0° 1287329	-2294	0° 8953503	0° 8943233	- 74	0° 3883180	0° 3878727	- 538
30	° 1373948	° 1460457	2296	° 8932270	° 8920614	113	° 3873974	° 3868920	554
31	° 1546850	° 1633121	2298	° 8908267	° 8895230	152	° 3863567	° 3857914	569
32	0° 1719264	0° 1805272	-2299	0° 8881505	0° 8867093	- 192	0° 3851962	0° 3845711	- 584
	+	+		-	-		-	-	

# 198 PRECESSION, NUTATION, &c., 1922.

Mean Noon.	LONGITUDE.			Appar- ent Obliqui- ty.	OBLIQUITY.		Mean Noon.	LONGITUDE.			Appar- ent Obliqui- ty.	OBLIQUITY.	
	Pre- cession from 1922-0	Nutation.			Nutation.			Pre- cession from 1922-0	Nutation.			Nutation.	
		$\Delta L$	$d L$		$\Delta \omega$	$d \omega$			$\Delta L$	$d L$		$\Delta \omega$	$d \omega$
		+		23°26'	-				+		23°26'	-	
Jan. 1	0.05	4.62	+16	48.39	9.57	+01	Feb. 16	6.38	4.71	-08	49.00	8.89	+04
2	0.19	4.65	+13	48.39	9.56	+03	17	6.52	4.68	-11	49.02	8.88	+01
3	0.32	4.68	+07	48.40	9.55	+05	18	6.65	4.65	-09	49.03	8.86	+03
4	0.46	4.70	-01	48.40	9.55	+06	19	6.79	4.61	-04	49.05	8.84	+06
5	0.60	4.73	-09	48.41	9.54	+06	20	6.93	4.57	+03	49.06	8.83	+07
6	0.74	4.76	-16	48.41	9.53	+05	21	7.07	4.53	+10	49.07	8.81	+07
7	0.88	4.78	-22	48.42	9.52	+03	22	7.21	4.49	+16	49.08	8.80	+05
8	1.01	4.81	-25	48.43	9.51	00	23	7.34	4.45	+19	49.10	8.78	+03
9	1.15	4.83	-24	48.44	9.50	-03	24	7.48	4.40	+19	49.11	8.77	00
10	1.29	4.86	-19	48.45	9.49	-06	25	7.62	4.36	+17	49.12	8.76	+02
11	1.43	4.88	-10	48.46	9.48	-07	26	7.76	4.32	+12	49.14	8.75	+04
12	1.56	4.90	00	48.47	9.47	-07	27	7.89	4.27	+06	49.15	8.73	+06
13	1.70	4.92	+09	48.48	9.46	-06	28	8.03	4.22	-02	49.16	8.72	+07
14	1.84	4.94	+16	48.49	9.45	-02	Mar. 1	8.17	4.17	-10	49.17	8.71	+06
15	1.98	4.95	+19	48.50	9.43	+02	2	8.31	4.12	-17	49.18	8.70	+05
16	2.11	4.97	+17	48.51	9.42	+05	3	8.44	4.07	-22	49.19	8.69	+02
17	2.25	4.98	+11	48.53	9.41	+07	4	8.58	4.02	-25	49.19	8.68	+01
18	2.39	5.00	+03	48.54	9.39	+08	5	8.72	3.96	-23	49.20	8.67	+04
19	2.53	5.01	-05	48.55	9.38	+06	6	8.86	3.91	-18	49.21	8.66	+06
20	2.66	5.02	-10	48.57	9.36	+03	7	8.99	3.86	-09	49.22	8.65	+07
21	2.80	5.03	-11	48.58	9.35	00	8	9.13	3.80	00	49.22	8.65	+07
22	2.94	5.04	-08	48.59	9.33	-04	9	9.27	3.74	+08	49.23	8.64	+05
23	3.08	5.04	-03	48.61	9.31	-06	10	9.41	3.69	+14	49.23	8.63	+01
24	3.21	5.05	+04	48.63	9.30	-07	11	9.54	3.63	+15	49.24	8.63	+03
25	3.35	5.05	+11	48.64	9.28	-07	12	9.68	3.57	+12	49.24	8.62	+06
26	3.49	5.05	+16	48.66	9.27	-05	13	9.82	3.51	+05	49.24	8.62	+08
27	3.63	5.05	+18	48.67	9.25	-03	14	9.96	3.46	-01	49.25	8.62	+07
28	3.76	5.05	+18	48.69	9.23	00	15	10.09	3.40	-08	49.25	8.61	+05
29	3.90	5.05	+15	48.70	9.21	+03	16	10.23	3.34	-11	49.25	8.61	+02
30	4.04	5.04	+09	48.72	9.20	+05	17	10.37	3.28	-10	49.25	8.61	+02
31	4.18	5.04	+02	48.74	9.18	+06	18	10.51	3.22	-06	49.25	8.61	+05
Feb. 1	4.32	5.03	-06	48.76	9.16	+07	19	10.65	3.16	+01	49.25	8.61	+07
2	4.45	5.02	-14	48.77	9.14	+06	20	10.78	3.10	+09	49.25	8.61	+07
3	4.59	5.01	-20	48.79	9.12	+04	21	10.92	3.04	+15	49.24	8.61	+06
4	4.73	5.00	-24	48.81	9.10	+01	22	11.06	2.98	+19	49.24	8.61	+05
5	4.87	4.98	-25	48.82	9.09	-02	23	11.20	2.92	+20	49.24	8.61	+01
6	5.00	4.96	-22	48.84	9.07	-05	24	11.33	2.86	+19	49.23	8.62	+01
7	5.14	4.95	-15	48.86	9.05	-07	25	11.47	2.80	+15	49.23	8.62	+04
8	5.28	4.93	-05	48.87	9.03	-07	26	11.61	2.74	+09	49.22	8.62	+05
9	5.42	4.91	+04	48.89	9.01	-06	27	11.75	2.68	+01	49.22	8.63	+06
10	5.55	4.88	+12	48.91	9.00	-03	28	11.88	2.62	-06	49.21	8.63	+06
11	5.69	4.86	+16	48.92	8.98	00	29	12.02	2.56	-14	49.20	8.64	+05
12	5.83	4.83	+16	48.94	8.96	+04	30	12.16	2.50	-20	49.19	8.65	+03
13	5.97	4.81	+12	48.96	8.94	+07	31	12.30	2.44	-23	49.18	8.66	00
14	6.10	4.78	+05	48.97	8.93	+08	Apr. 1	12.43	2.38	-22	49.17	8.66	+03
15	6.24	4.75	-03	48.99	8.91	+07	2	12.57	2.33	-18	49.16	8.67	+05
16	6.38	4.71	-08	49.00	8.89	+04	3	12.71	2.27	-11	49.15	8.68	+07

# PRECESSION, NUTATION, &c., 1922. 199

Mean Noon.	LONGITUDE.			Appar- ent Obliq- uity.	OBLIQUITY.			Mean Noon.	LONGITUDE.			Appar- ent Obliq- uity.	OBLIQUITY.		
	Pre- cession from 1922·0	Nutation.			Nutation.		Pre- cession from 1922·0		Nutation.		Nutation.				
		$\Delta L$	$d L$		$\Delta \omega$	$d \omega$			$\Delta L$	$d L$	$\Delta \omega$		$d \omega$		
		+		23°26'	-					+		23°26'	-		
Apr.	3	12·71	2·27	-·11	49·15	8·68	-·07	May	19	19·04	0·89	+·13	48·30	9·47	+·04
	4	12·85	2·22	-·03	49·14	8·69	-·07		20	19·18	0·89	+·07	48·28	9·49	+·06
	5	12·98	2·16	+·06	49·13	8·70	-·05		21	19·31	0·90	-·01	48·27	9·51	+·06
	6	13·12	2·11	+·12	49·12	8·71	-·02		22	19·45	0·90	-·09	48·25	9·53	+·06
	7	13·26	2·05	+·14	49·10	8·73	+·01		23	19·59	0·90	-·15	48·23	9·54	+·05
	8	13·40	2·00	+·12	49·09	8·74	+·05		24	19·73	0·91	-·20	48·21	9·56	+·02
	9	13·54	1·95	+·06	49·08	8·75	+·07		25	19·87	0·92	-·22	48·19	9·57	-·01
	10	13·67	1·90	-·01	49·06	8·76	+·08		26	20·00	0·93	-·20	48·18	9·59	-·04
	11	13·81	1·85	-·08	49·05	8·78	+·06		27	20·14	0·94	-·15	48·16	9·61	-·06
	12	13·95	1·80	-·12	49·03	8·79	+·03		28	20·28	0·95	-·06	48·15	9·62	-·07
	13	14·09	1·75	-·12	49·02	8·81	·00		29	20·42	0·96	+·03	48·13	9·63	-·07
	14	14·22	1·71	-·09	49·00	8·82	-·04		30	20·55	0·97	+·10	48·11	9·65	-·05
May	15	14·36	1·66	-·02	48·98	8·84	-·06	June	31	20·69	0·98	+·15	48·10	9·66	-·01
	16	14·50	1·62	+·06	48·97	8·85	-·07		1	20·83	1·00	+·16	48·09	9·67	+·02
	17	14·64	1·57	+·13	48·95	8·87	-·07		2	20·97	1·01	+·12	48·07	9·69	+·06
	18	14·77	1·53	+·18	48·93	8·89	-·05		3	21·10	1·03	+·04	48·06	9·70	+·07
	19	14·91	1·49	+·21	48·91	8·90	-·02		4	21·24	1·04	-·04	48·05	9·71	+·07
	20	15·05	1·45	+·20	48·89	8·92	+·01		5	21·38	1·06	-·11	48·04	9·72	+·05
	21	15·19	1·41	+·17	48·87	8·94	+·03		6	21·52	1·08	-·14	48·02	9·73	+·02
	22	15·32	1·37	+·11	48·85	8·96	+·05		7	21·65	1·10	-·14	48·01	9·74	-·02
	23	15·46	1·34	+·04	48·83	8·98	+·06		8	21·79	1·12	-·09	48·00	9·75	-·05
	24	15·60	1·30	-·03	48·82	8·99	+·06		9	21·93	1·14	-·02	47·99	9·76	-·07
	25	15·74	1·27	-·11	48·80	9·01	+·06		10	22·07	1·16	+·06	47·98	9·77	-·07
	26	15·87	1·24	-·17	48·78	9·03	+·04		11	22·20	1·18	+·13	47·97	9·77	-·06
27	16·01	1·21	-·21	48·75	9·05	+·01	12	22·34	1·20	+·18	47·97	9·78	-·04		
28	16·15	1·18	-·22	48·73	9·07	-·02	13	22·48	1·22	+·20	47·96	9·79	-·01		
29	16·29	1·15	-·19	48·71	9·09	-·05	14	22·62	1·24	+·19	47·95	9·79	+·01		
30	16·42	1·12	-·13	48·69	9·11	-·07	15	22·76	1·27	+·15	47·95	9·80	+·04		
1	16·56	1·10	-·04	48·67	9·13	-·07	16	22·89	1·29	+·09	47·94	9·80	+·05		
2	16·70	1·08	+·04	48·65	9·15	-·06	17	23·03	1·31	+·01	47·93	9·81	+·06		
3	16·84	1·05	+·11	48·63	9·17	-·04	18	23·17	1·34	-·07	47·93	9·81	+·06		
4	16·98	1·04	+·14	48·61	9·19	·00	19	23·31	1·36	-·14	47·93	9·81	+·05		
5	17·11	1·01	+·13	48·59	9·21	+·04	20	23·44	1·38	-·19	47·92	9·81	+·03		
6	17·25	1·00	+·08	48·57	9·23	+·07	21	23·58	1·41	-·22	47·92	9·82	·00		
7	17·39	0·98	+·01	48·54	9·25	+·08	22	23·72	1·43	-·21	47·92	9·82	-·03		
8	17·53	0·97	-·07	48·52	9·27	+·07	23	23·86	1·45	-·17	47·92	9·82	-·06		
9	17·66	0·95	-·13	48·50	9·29	+·04	24	23·99	1·48	-·10	47·92	9·82	-·07		
10	17·80	0·94	-·14	48·48	9·31	+·01	25	24·13	1·50	-·01	47·92	9·81	-·07		
11	17·94	0·93	-·12	48·46	9·33	-·03	26	24·27	1·52	+·08	47·92	9·81	-·06		
12	18·08	0·92	-·06	48·44	9·34	-·06	27	24·41	1·55	+·14	47·92	9·81	-·03		
13	18·21	0·91	+·02	48·42	9·36	-·07	28	24·54	1·57	+·17	47·92	9·81	+·01		
14	18·35	0·91	+·10	48·40	9·38	-·07	29	24·68	1·59	+·15	47·92	9·80	+·05		
15	18·49	0·90	+·16	48·38	9·40	-·06	30	24·82	1·61	+·09	47·92	9·80	+·07		
16	18·63	0·90	+·20	48·36	9·42	-·03	July 1	24·96	1·64	+·01	47·92	9·80	+·08		
17	18·76	0·89	+·21	48·34	9·44	·00	2	25·09	1·66	-·07	47·93	9·79	+·06		
18	18·90	0·89	+·18	48·32	9·46	+·02	3	25·23	1·68	-·12	47·93	9·78	+·03		
19	19·04	0·89	+·13	48·30	9·47	+·04	4	25·37	1·70	-·14	47·94	9·78	·00		

**July 4**

**Aug.**

## PRECESSION, NUTATION, &amp;C., 1922. 201

Mean Noon.	LONGITUDE.			Appar- ent Obliqui- ty.	OBLIQUITY.			Mean Noon.	LONGITUDE.			Appar- ent Obliqui- ty.	OBLIQUITY.				
	Pre- cession from 1922-0	Nutation.			Nutation.		Pre- cession from 1922-0		Nutation.		Nutation.						
		$\Delta L$	$d L$		$\Delta \omega$	$d \omega$			$\Delta L$	$d L$	$\Delta \omega$		$d \omega$				
				23° 26'								23° 26'					
Oct.	4	38° 03	0° 90	+° 05	48° 82	8° 78	+° 06	Nov. 19	44° 36	2° 34	-° 10	48° 03	9° 51	-° 04			
	5	38° 16	0° 96	-° 03	48° 81	8° 79	+° 06		20	44° 50	2° 33	-° 02	48° 01	9° 53		-° 07	
	6	38° 31	1° 01	-° 11	48° 80	8° 79	+° 05		21	44° 64	2° 33	+° 07	48° 00	9° 54		-° 07	
	7	38° 44	1° 07	-° 17	48° 79	8° 80	+° 03		22	44° 77	2° 32	+° 15	47° 98	9° 56		-° 06	
	8	38° 58	1° 13	-° 21	48° 78	8° 81	+° 01		23	44° 91	2° 31	+° 21	47° 96	9° 58		-° 04	
	9	38° 72	1° 18	-° 22	48° 77	8° 82	-° 02		24	45° 05	2° 30	+° 23	47° 94	9° 59		-° 01	
	10	38° 86	1° 23	-° 19	48° 76	8° 83	-° 05		25	45° 19	2° 29	+° 22	47° 92	9° 61		+° 02	
	11	38° 99	1° 29	-° 14	48° 75	8° 84	-° 07		26	45° 32	2° 28	+° 17	47° 91	9° 63		+° 04	
	12	39° 13	1° 34	-° 07	48° 74	8° 85	-° 07		27	45° 46	2° 26	+° 11	47° 89	9° 64		+° 06	
	13	39° 27	1° 39	+° 01	48° 72	8° 86	-° 06		28	45° 60	2° 25	+° 03	47° 87	9° 65		+° 06	
	14	39° 41	1° 44	+° 08	48° 71	8° 88	-° 04		29	45° 73	2° 23	-° 05	47° 86	9° 67		+° 06	
	15	39° 54	1° 49	+° 12	48° 70	8° 89	-° 01		30	45° 87	2° 21	-° 12	47° 84	9° 68		+° 05	
	16	39° 68	1° 54	+° 11	48° 68	8° 90	+° 03		Dec.	1	46° 01	2° 20	-° 17	47° 83		9° 70	+° 03
	17	39° 82	1° 58	+° 07	48° 67	8° 92	+° 06			2	46° 15	2° 18	-° 20	47° 82		9° 71	+° 00
	18	39° 96	1° 63	° 00	48° 65	8° 93	+° 08			3	46° 29	2° 15	-° 19	47° 80		9° 72	-° 03
	19	40° 09	1° 68	-° 07	48° 63	8° 94	+° 07			4	46° 42	2° 13	-° 16	47° 79		9° 73	-° 05
	20	40° 23	1° 72	-° 13	48° 62	8° 96	+° 05			5	46° 56	2° 11	-° 10	47° 78		9° 74	-° 07
	21	40° 37	1° 76	-° 15	48° 60	8° 98	+° 01			6	46° 70	2° 09	-° 02	47° 77		9° 75	-° 07
22	40° 51	1° 80	-° 12	48° 58	8° 99	-° 02	7	46° 84		2° 06	+° 06	47° 75	9° 76	-° 06			
23	40° 64	1° 84	-° 06	48° 57	9° 01	-° 05	8	46° 97		2° 03	+° 12	47° 74	9° 77	-° 03			
24	40° 78	1° 88	+° 03	48° 55	9° 02	-° 07	9	47° 11		2° 01	+° 14	47° 73	9° 78	+° 01			
25	40° 92	1° 92	+° 11	48° 53	9° 04	-° 07	10	47° 25		1° 98	+° 12	47° 72	9° 79	+° 04			
26	41° 06	1° 95	+° 18	48° 51	9° 06	-° 06	11	47° 39		1° 95	+° 06	47° 71	9° 80	+° 07			
27	41° 20	1° 99	+° 23	48° 49	9° 08	-° 03	12	47° 53		1° 92	-° 02	47° 71	9° 80	+° 08			
28	41° 33	2° 02	+° 23	48° 48	9° 09	° 00	13	47° 66		1° 89	-° 10	47° 70	9° 81	+° 07			
29	41° 47	2° 05	+° 20	48° 46	9° 11	+° 03	14	47° 80		1° 86	-° 15	47° 69	9° 82	+° 04			
30	41° 61	2° 08	+° 15	48° 44	9° 13	+° 05	15	47° 94		1° 83	-° 16	47° 68	9° 82	° 00			
31	41° 75	2° 11	+° 08	48° 42	9° 15	+° 06	16	48° 08		1° 80	-° 13	47° 68	9° 82	-° 03			
Nov.	1	41° 88	2° 13	° 00	48° 40	9° 17	+° 06	17		48° 21	1° 77	-° 06	47° 68	9° 83	-° 06		
	2	42° 02	2° 16	-° 08	48° 38	9° 19	+° 06	18		48° 35	1° 74	+° 03	47° 67	9° 83	-° 07		
	3	42° 16	2° 18	-° 14	48° 36	9° 20	+° 04	19	48° 49	1° 71	+° 11	47° 67	9° 83	-° 07			
	4	42° 30	2° 20	-° 18	48° 34	9° 22	+° 02	20	48° 63	1° 68	+° 18	47° 67	9° 83	-° 05			
	5	42° 43	2° 22	-° 20	48° 32	9° 24	-° 01	21	48° 76	1° 64	+° 22	47° 67	9° 83	-° 02			
	6	42° 57	2° 24	-° 19	48° 30	9° 26	-° 04	22	48° 90	1° 61	+° 22	47° 67	9° 83	+° 01			
	7	42° 71	2° 26	-° 15	48° 27	9° 28	-° 06	23	49° 04	1° 58	+° 18	47° 67	9° 83	+° 03			
	8	42° 85	2° 27	-° 08	48° 25	9° 30	-° 07	24	49° 18	1° 55	+° 12	47° 67	9° 83	+° 05			
	9	42° 98	2° 29	° 00	48° 23	9° 32	-° 07	25	49° 31	1° 52	+° 05	47° 67	9° 83	+° 06			
	10	43° 12	2° 30	+° 07	48° 21	9° 34	-° 05	26	49° 45	1° 48	-° 03	47° 67	9° 82	+° 06			
	11	43° 26	2° 31	+° 12	48° 19	9° 36	-° 02	27	49° 59	1° 45	-° 10	47° 67	9° 82	+° 05			
	12	43° 40	2° 32	+° 12	48° 17	9° 38	+° 02	28	49° 73	1° 42	-° 16	47° 68	9° 81	+° 03			
	13	43° 53	2° 33	+° 09	48° 15	9° 40	+° 05	29	49° 86	1° 39	-° 19	47° 68	9° 81	+° 01			
	14	43° 67	2° 33	+° 02	48° 13	9° 42	+° 07	30	50° 00	1° 36	-° 20	47° 69	9° 80	-° 02			
	15	43° 81	2° 34	-° 06	48° 11	9° 43	+° 07	31	50° 14	1° 33	-° 18	47° 69	9° 80	-° 04			
	16	43° 95	2° 34	-° 13	48° 09	9° 45	+° 06	32	50° 28	1° 30	-° 12	47° 70	9° 79	-° 06			
	17	44° 08	2° 34	-° 16	48° 07	9° 47	+° 03										
	18	44° 22	2° 34	-° 15	48° 05	9° 49	-° 01										
19	44° 36	2° 34	-° 10	48° 03	9° 51	-° 04											

## 202 MEAN PLACES OF STARS, 1922.

FOR JANUARY 0<sup>d</sup>.642

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			h m s	s	s			
$\alpha$ Andromedæ	2.2	A o p	0 42 1.126	+ 3.0866	+ 0.0107	N. 28° 39' 35".38	+ 20".042	- ".163
$\beta$ Cassiopeïæ	2.4	F 5	0 5 0.365	3.1208	+ 0.0681	N. 58 43 10.58	20.040	- .180
$\gamma$ Pegasi	2.9	B 2	0 9 13.028	+ 3.0869	+ 0.0003	N. 14 44 59.95	20.029	- .010
$\delta$ Octantis	7.2	A o	0 12 17.505	- 0.3375	+ 0.0057	S. 88 47 47.81	20.016	+ .006
$\epsilon$ Ceti	3.8	K o	0 15 27.243	+ 3.0581	- 0.0013	S. 9 15 22.32	20.000	- .030
$\zeta$ Tucanæ	4.3	F 8	0 16 1.206	+ 2.8695	+ 2.736	S. 65 19 58.10	+ 19.996	+ 1.172
$\delta$ Piscium	5.6	K o	0 16 34.991	3.0860	+ 0.0003	N. 7 45 25.91	19.993	+ .016
44 Piscium	6.0	G 5	0 21 24.208	3.0760	- 0.0014	N. 1 30 27.87	19.957	- .023
$\beta$ Hydri	2.9	G o	0 21 40.591	2.4942	+ 6.957	S. 77 41 36.72	19.956	+ .318
$\alpha$ Phœnicis	2.4	K o	0 22 25.974	2.9521	+ 0.0188	S. 42 43 46.47	19.949	- .403
12 Ceti	6.0	K 5	0 26 3.507	+ 3.0611	+ 0.0011	S. 4 23 17.07	+ 19.915	.000
$\epsilon$ Andromedæ	4.5	G 5	0 34 25.761	3.1831	- 0.0173	N. 28 53 18.32	19.819	- .251
$\delta$ Andromedæ	3.5	K o	0 35 9.164	3.1927	+ 0.0110	N. 30 26 3.14	19.810	- .097
$\alpha$ Cassiopeïæ	var.	K o	0 36 4.220	3.3846	+ 0.0063	N. 56 6 35.24	19.797	- .032
$\beta$ Ceti	2.2	K o	0 39 40.505	2.9961	+ 0.0160	S. 18 24 51.91	19.746	+ .041
$\delta$ Piscium	4.6	K 5	0 44 38.006	+ 3.1052	+ 0.0052	N. 7 9 38.85	+ 19.666	- .046
20 Ceti	4.9	K o	0 49 1.197	3.0650	- 0.0005	S. 1 34 2.53	19.588	- .003
$\gamma$ Cassiopeïæ	2.3	B o p	0 51 59.238	3.5995	+ 0.0036	N. 60 17 40.88	19.531	- .005
$\mu$ Andromedæ	3.9	A 2	0 52 25.073	3.3101	+ 0.0132	N. 38 4 35.58	19.523	+ .030
$\alpha$ Sculptoris	4.4	B 5	0 54 50.820	2.8915	- 0.0018	S. 29 46 44.38	19.474	- .013
$\epsilon$ Piscium	4.5	K o	0 58 53.588	+ 3.1173	- 0.0054	N. 7 28 13.82	+ 19.386	+ .026
72 Piscium	5.7	F 2	1 0 58.114	3.1639	- 0.0001	N. 14 31 36.88	19.339	+ .054
$\beta$ Phœnicis	3.4	K o	1 2 36.201	2.6843	- 0.0057	S. 47 8 11.65	19.301	- .024
$\beta$ Andromedæ	2.4	M a	1 5 21.523	3.3380	+ 0.0148	N. 35 12 26.46	19.235	- .117
$\zeta$ 1 Piscium	5.6	A 5	1 9 39.259	3.1230	+ 0.0096	N. 7 9 47.75	19.126	- .052
$\theta$ Ceti	3.8	K o	1 20 7.434	+ 3.0036	- 0.0057	S. 8 35 7.57	+ 18.833	- .215
$\delta$ Cassiopeïæ	2.8	A 5	1 20 41.965	3.8656	+ 0.0407	N. 59 49 50.19	18.815	- .037
$\gamma$ Phœnicis	3.4	K 5	1 24 58.704	2.6097	- 0.0038	S. 43 43 3.42	18.683	- .218
$\eta$ Piscium	3.7	G 5	1 27 18.368	3.2054	+ 0.0015	N. 14 56 39.11	18.608	- .003
$\alpha$ Ursæ Minoris	2.1	F 8	1 32 41.459	30.1578	+ 1.504	N. 88 53 15.91	18.428	+ .001
$\alpha$ Eridani	0.6	B 5	1 34 48.631	+ 2.2252	+ 0.0103	S. 57 37 58.08	+ 18.354	- .041
$\nu$ Piscium	4.7	K o	1 37 22.204	3.1218	- 0.0017	N. 5 5 35.99	18.263	+ .002
$\delta$ Piscium	4.5	K o	1 41 16.344	3.1609	+ 0.0049	N. 8 45 56.30	18.119	+ .045
$\zeta$ Ceti	3.9	K o	1 47 36.585	2.9583	+ 0.0020	S. 10 43 11.16	17.876	- .027
$\epsilon$ Cassiopeïæ	3.4	B 3	1 48 45.932	4.2862	+ 0.0053	N. 63 17 12.31	17.830	- .015
$\beta$ Arietis	2.7	A 5	1 50 19.603	+ 3.3032	+ 0.0064	N. 20 25 38.35	+ 17.767	- .111
$\alpha$ Hydri	3.0	F o	1 56 18.253	1.8540	+ 0.0276	S. 61 56 56.64	17.519	+ .026
$\nu$ Ceti	4.2	K 5	1 56 19.746	2.8175	+ 0.0082	S. 21 27 18.56	17.518	- .009
$\gamma$ Andromedæ	2.3	K o	1 59 6.228	3.6694	+ 0.0046	N. 41 57 22.23	17.399	- .051
$\alpha$ Arietis	2.2	K 2	2 246.314	3.3636	+ 0.0139	N. 23 5 39.49	17.237	- .144
$\beta$ Trianguli	3.1	A 5	2 4 53.780	+ 3.5509	+ 0.0127	N. 34 37 8.50	+ 17.141	- .044
$\zeta$ 1 Ceti	4.5	G 5	2 8 51.797	3.1791	- 0.0013	N. 8 28 52.84	16.958	- .016
67 Ceti	5.7	G 5	2 13 5.488	2.9856	+ 0.0054	S. 6 46 51.76	16.758	- .110
$\phi$ Eridani	3.8	B 8	2 13 43.329	+ 2.1347	+ 0.0081	S. 51 52 22.52	+ 16.729	- .036

PROPER NAMES.— $\gamma$  Pegasi - *Algenib*.  $\alpha$  Ursæ Minoris - *Polaris*.  $\alpha$  Eridani - *Achernar*.VARIABLE STARS.— $\alpha$  Cassiopeïæ. The limits of magnitude are 2.2 and 2.8. Period irregular.



# MEAN PLACES OF STARS, 1922. 203

FOR JANUARY *od.642*

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			<i>h m s</i>	<i>s</i>	<i>s</i>			
$\theta$ Arietis -	5.7	A o	2 13 46.975	+ 3.3342	- .0010	N. 19 32 27.60	+ 16.726	- .002
$\kappa$ Fornacis -	5.4	F 5	2 18 58.402	2.7310	+ .0142	S. 24 10 12.88	16.471	- .063
$\delta$ Hydri -	4.3	A 2	2 20 21.315	1.0702	- .0097	S. 69 0 50.36	16.401	+ .020
$\xi^2$ Ceti -	4.3	A o	2 24 0.552	3.1847	+ .0025	N. 8 6 40.27	16.216	- .007
$\nu$ Ceti -	5.0	G 5	2 31 46.695	+ 3.1484	- .0025	N. 5 15 13.34	15.806	- .018
$\eta$ B Octantis -	7.8	F o	2 32 7.876	- 8.8982	- .0203	S. 86 3 56.00	+ 15.789	+ .006
$\delta$ Ceti -	4.0	B 2	2 35 28.975	+ 3.0726	+ .0011	S. 0 0 25.66	15.607	+ .004
$\gamma$ Ceti -	3.6	A o	2 39 15.400	3.1162	- .0098	N. 2 54 28.16	15.397	- .148
$\pi$ Ceti -	4.4	B 5	2 40 24.538	2.8552	- .0012	S. 14 11 17.87	15.332	- .011
$\beta$ Fornacis -	4.5	K o	2 45 49.577	2.5041	+ .0080	S. 32 43 58.63	15.022	+ .156
$\sigma$ Arietis -	5.5	B 5	2 47 10.971	+ 3.3075	+ .0016	N. 14 45 40.90	+ 14.942	- .034
$\iota$ B Octantis -	8.4	G 5	2 51 37.695	- 3.13288	- .0618	S. 88 29 6.36	14.682	- .025
$\epsilon$ Arietis (mean)	4.6	A 2	2 54 44.866	+ 3.4277	- .0009	N. 21 1 45.14	14.493	- .010
$\theta$ Eridani -	3.1	A 2	2 55 18.348	2.2792	- .0025	S. 40 36 59.88	14.461	+ .024
$\alpha$ Ceti -	2.8	M a	2 58 11.991	3.1348	- .0009	N. 3 47 4.38	14.285	- .078
$\gamma$ Persei -	3.1	F 5 <i>p</i>	2 59 8.190	+ 4.3312	+ .0010	N. 53 12 7.91	+ 14.227	- .004
$\mu$ Horologii -	5.2	F o	3 1 46.218	1.4208	- .0123	S. 60 2 22.80	14.064	- .054
$\beta$ Persei -	var.	B 8	3 3 5.199	3.8951	+ .0008	N. 40 39 22.37	13.982	- .002
$\delta$ Arietis -	4.5	K o	3 7 9.923	3.4163	+ .0110	N. 19 25 57.86	13.724	+ .001
$\tau^1$ Arietis -	5.2	B 3	3 16 43.229	3.4583	+ .0023	N. 20 52 0.39	13.101	- .033
$\alpha$ Persei -	1.9	F 5	3 18 44.691	+ 4.2694	+ .0030	N. 49 35 5.21	+ 12.968	- .028
$\alpha$ Tauri -	3.8	G 5	3 20 36.793	3.2308	- .0046	N. 8 45 19.22	12.844	- .074
$f$ Tauri -	4.3	K o	3 26 33.852	3.3083	+ .0016	N. 12 40 13.36	12.440	+ .002
$\epsilon$ Eridani -	3.8	K o <i>p</i>	3 29 15.269	2.8916	- .0660	S. 9 43 16.76	12.254	+ .027
45 G Horologii	5.6	K o	3 30 14.952	1.7790	+ .0048	S. 50 38 34.00	12.185	+ .081
$\tau^5$ Eridani -	4.3	B 8	3 30 20.444	+ 2.6462	+ .0023	S. 21 53 37.70	+ 12.177	- .039
11 Tauri -	6.2	A o	3 36 6.569	3.5789	+ .0014	N. 25 4 42.14	11.772	- .008
$\delta$ Persei -	3.1	B 5	3 37 21.813	4.2593	+ .0035	N. 47 32 21.98	11.685	- .036
$\delta$ Eridani -	3.7	K o	3 39 30.627	2.8795	- .0064	S. 10 1 35.58	11.532	+ .747
17 Tauri -	3.8	B 5	3 40 14.396	3.5575	+ .0017	N. 23 52 9.10	11.480	- .044
$\eta$ Tauri -	3.0	B 5	3 42 50.654	+ 3.5612	+ .0016	N. 23 51 53.98	+ 11.293	- .050
$\gamma$ Hydri -	3.2	M a	3 48 25.712	- 0.9675	+ .0097	S. 74 28 41.94	10.886	+ .117
$\zeta$ Persei -	2.9	B 1	3 49 13.469	+ 3.7661	+ .0010	N. 31 39 11.35	10.827	- .014
$\epsilon$ Persei -	3.0	B 1	3 52 36.888	4.0181	+ .0031	N. 39 47 9.03	10.577	- .027
$\gamma$ Eridani -	3.2	K 5	3 54 23.383	2.7941	+ .0047	S. 13 43 46.21	10.445	- .111
A Tauri -	4.5	K o	4 0 4.858	+ 3.5373	+ .0069	N. 21 52 11.80	+ 10.014	- .058
43 Tauri -	5.7	G 5	4 4 37.162	3.4851	+ .0079	N. 19 24 14.20	9.668	- .044
$\alpha^1$ Eridani -	4.1	F 5	4 8 3.427	2.9270	+ .0007	S. 7 2 23.75	9.406	+ .086
$\alpha$ Horologii -	3.8	K o	4 11 25.009	1.9836	+ .0040	S. 42 29 11.09	9.146	- .231
$\alpha$ Reticuli -	3.4	G 5	4 13 24.901	0.7617	+ .0048	S. 62 40 7.82	8.990	+ .044
$\nu^4$ Eridani -	3.6	B 9	4 14 56.402	+ 2.2648	+ .0025	S. 33 59 16.20	+ 8.870	- .000
$\gamma$ Tauri -	3.9	K o	4 15 21.121	3.4040	+ .0082	N. 15 26 25.17	8.838	- .027
$\epsilon$ Tauri -	3.6	K o	4 24 3.592	3.4933	+ .0082	N. 19 0 31.06	8.148	- .034
$\alpha$ Tauri -	1.1	K 5	4 31 26.560	+ 3.4360	+ .0047	N. 16 21 13.19	+ 7.554	- .189

PROPER NAMES.— $\beta$  Persei - *Algol*.

$\alpha$  Tauri - *Altebaran*.

VARIABLE STARS.— $\beta$  Persei. The limits of magnitude are 2.1 and 3.2. Period  $2^d 21^h$ .

NOTE.— $\epsilon$  Eridani. The apparent places are affected with a parallax of  $0''.32$ .

# 204 MEAN PLACES OF STARS, 1922.

FOR JANUARY *od.642*

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>s</sup>	<sup>s</sup>			
$\alpha$ Doradûs -	3.5	A o p	4 32 18.584	+ 1.2886	+ .0067	S. 55 12 21.48	+ 7.484	- .011
53 Eridani -	4.0	K o	4 34 36.375	2.7519	- .0061	S. 14 27 19.65	7.297	- .154
$\tau$ Tauri -	4.3	B 5	4 37 33.688	3.5987	+ .0007	N. 22 48 30.58	7.056	- .020
$\mu$ Eridani -	4.2	B 5	4 41 36.083	2.9980	+ .0013	S. 3 23 47.84	6.724	- .012
$\pi^3$ Orionis -	3.3	F 8	4 45 36.259	3.2244	+ .0312	N. 6 49 34.88	6.391	+ .023
$\iota$ Aurigæ -	2.9	K 2	4 51 54.678	+ 3.9039	+ .0009	N. 33 2 38.20	+ 5.868	- .021
$\epsilon$ Aurigæ -	var.	F 5 p	4 56 22.130	4.3013	+ .0012	N. 43 42 33.59	5.494	- .013
$\eta$ Aurigæ -	3.3	B 3	5 1 2.550	4.2013	+ .0039	N. 41 7 49.53	5.100	- .072
$\epsilon$ Leporis -	3.3	K 5	5 2 9.505	2.5374	+ .0012	S. 22 28 29.48	5.006	- .064
$\beta$ Eridani -	2.9	A 2	5 4 0.894	2.9551	- .0056	S. 5 11 10.10	4.848	- .074
$\mu$ Leporis -	3.3	A o p	5 9 25.632	+ 2.6915	+ .0027	S. 16 17 48.62	+ 4.386	- .028
$\beta$ Orionis -	0.3	B 8 p	5 10 47.304	2.8825	.0000	S. 8 17 26.44	4.271	.000
$\alpha$ Aurigæ -	0.2	G o	5 10 55.453	4.4212	+ .0086	N. 45 55 12.90	4.260	- .429
$\sigma$ Orionis -	4.6	B 3	5 17 46.763	3.0623	- .0001	S. 0 27 29.86	3.670	+ .005
$\eta$ Orionis (mean)	3.4	B 1	5 20 33.290	3.0160	+ .0005	S. 2 28 4.15	3.433	+ .001
$\gamma$ Orionis -	1.7	B 2	5 20 56.796	+ 3.2176	- .0004	N. 6 16 48.54	+ 3.399	- .017
$\beta$ Tauri -	1.8	B 8	5 21 21.593	3.7893	+ .0025	N. 28 32 34.52	3.364	- .177
$\beta$ Leporis -	3.0	G o	5 24 54.196	2.5705	+ .0004	S. 20 49 14.86	3.058	- .093
20 G Pictoris -	5.5	G 5	5 28 0.713	1.6469	- .0005	S. 47 8 2.30	2.788	- .188
$\delta$ Orionis -	2.5	B o	5 28 1.259	3.0645	.0000	S. 0 21 20.71	2.787	- .002
$\alpha$ Leporis -	2.7	F o	5 29 17.385	+ 2.6456	+ .0003	S. 17 52 37.82	+ 2.678	.000
$\iota$ Orionis -	2.9	O e 5	5 31 37.031	2.9343	+ .0001	S. 5 57 36.25	2.476	- .002
$\epsilon$ Orionis -	1.7	B o	5 32 15.294	3.0438	.0000	S. 1 15 2.04	2.421	+ .001
$\beta$ Doradûs -	3.8	F 5	5 32 56.902	0.5191	+ .0002	S. 62 32 27.81	2.361	- .026
$\zeta$ Tauri -	3.0	B 3	5 32 58.946	3.5847	+ .0006	N. 21 5 46.09	2.358	- .032
$\zeta$ Orionis -	2.0	B o	5 36 49.363	+ 3.0267	+ .0005	S. 1 58 58.37	+ 2.022	- .014
$\alpha$ Columbæ -	2.7	B 5 p	5 36 49.472	2.1721	+ .0006	S. 34 6 54.03	2.023	- .038
130 Tauri -	5.5	F o	5 42 53.303	3.4981	+ .0004	N. 17 42 4.15	1.495	- .006
$\sigma$ Orionis -	2.2	B o	5 44 3.411	+ 2.8450	+ .0001	S. 9 41 46.66	1.393	- .003
31 G Mensæ -	6.2	A o	5 45 16.372	- 11.6601	- .0120	S. 84 49 40.23	1.287	+ .087
$\beta$ Columbæ -	3.2	K o	5 48 12.527	+ 2.1104	+ .0034	S. 35 47 48.62	+ 1.031	+ .404
$\alpha$ Orionis -	var.	M a	5 50 56.922	3.2460	+ .0020	N. 7 23 37.38	0.792	+ .009
$\beta$ Aurigæ -	2.1	A o p	5 53 48.474	4.4058	- .0038	N. 44 56 27.97	0.541	- .006
$\theta$ Aurigæ -	2.7	A o p	5 54 24.144	4.0871	+ .0047	N. 37 12 30.63	0.490	- .091
1 Geminorum -	4.3	G 5	5 59 22.743	+ 3.6474	+ .0002	N. 23 16 7.63	+ 0.052	- .109
12 B Octantis -	6.8	K o	6 0 23.118	- 15.7221	- .0265	S. 85 55 59.05	- 0.034	+ .005
$\nu$ Orionis -	4.4	B 2	6 3 7.143	+ 3.4253	+ .0012	N. 14 46 44.37	0.273	- .025
$\eta$ Geminorum -	var.	M a	6 10 10.212	3.6266	- .0039	N. 22 31 50.45	0.889	- .016
$\zeta$ Canis Maj. -	3.1	B 3	6 17 19.039	2.3026	- .0006	S. 30 1 41.67	1.514	- .023
$\mu$ Geminorum -	3.2	M a	6 18 14.540	3.6261	+ .0046	N. 22 33 17.82	1.594	- .114
$\beta$ Canis Maj. -	2.0	B 1	6 19 15.863	+ 2.6423	- .0006	S. 17 54 58.03	- 1.683	+ .004
$\alpha$ Argûs -	-0.9	F o	6 22 13.225	1.3298	+ .0022	S. 52 39 9.68	1.941	+ .009
$\nu$ Geminorum -	4.1	B 5	6 24 19.919	3.5633	- .0005	N. 20 15 46.12	2.127	- .016
$\gamma$ Geminorum -	1.9	A o	6 33 12.398	3.4636	+ .0033	N. 16 28 1.42	- 2.894	- .048

PROPER NAMES.— $\beta$  Orionis - *Rigel*,  $\alpha$  Aurigæ - *Capella*,  $\gamma$  Orionis - *Bellatrix*.

$\alpha$  Orionis - *Betelgeuse*,  $\alpha$  Argûs - *Canopus*.

VARIABLE STARS.— $\epsilon$  Aurigæ - The limits of magnitude are 3.4 and 4.1.

$\alpha$  Orionis - The limits of magnitude are 1.0 and 1.4. Period irregular.

$\eta$  Geminorum - The limits of magnitude are 3.2 and 4.2. Period 231.4 days.

# MEAN PLACES OF STARS, 1922. 205

FOR JANUARY  $\text{od}^{\cdot}642$

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			h m s	s	s	$^{\circ}$ ' "	"	"
$\gamma$ Argûs -	3.2	B 8	6 35 22.566	+ 1.8360	+ .0008	S. 43 7 37.04	- 3.082	- .019
$\epsilon$ Geminorum -	3.2	G 5	6 39 8.053	3.6927	- .0001	N. 25 12 34.90	3.406	- .018
$\xi$ Geminorum -	3.4	F 5	6 40 54.738	3.3758	- .0076	N. 12 58 51.33	3.559	- .193
$\alpha$ Canis Maj. -	-1.6	A 0	6 41 42.651	2.6808	- .0374	S. 16 36 29.52	3.629	- 1.206
$\alpha$ Pictoris -	3.3	A 5	6 47 23.563	0.6277	- .0104	S. 61 51 27.28	4.116	+ .238
$\tau$ Argûs -	2.8	K 0	6 48 0.023	+ 1.4859	+ .0029	S. 50 31 16.89	- 4.168	- .096
$\theta$ Canis Maj. -	4.3	K 2	6 50 33.987	2.7971	- .0091	S. 11 56 23.17	4.387	- .007
$\epsilon$ Canis Maj. -	1.6	B 1	6 55 33.604	2.3576	- .0001	S. 28 51 54.10	4.812	+ .003
22 Canis Maj. -	3.7	K 5	6 58 36.701	2.3905	- .0006	S. 27 49 19.89	5.072	+ .002
$\zeta$ Geminorum -	var.	G 0	6 59 29.050	3.5605	- .0002	N. 20 41 9.36	5.145	- .007
$\text{o}^2$ Canis Maj. -	3.1	B 5 p	6 59 46.040	+ 2.5055	- .0002	S. 23 43 6.50	- 5.168	.000
$\gamma$ Canis Maj. -	4.1	B 5	7 0 13.794	2.7145	+ .0003	S. 15 31 1.32	5.207	- .010
51 H Cephei -	5.3	M a	7 4 29.540	29.0816	- .0581	N. 87 10 27.24	5.567	- .034
$\delta$ Canis Maj. -	2.0	F 8 p	7 5 13.122	2.4397	- .0015	S. 26 16 6.45	5.627	+ .003
51 Geminorum	5.3	M b	7 8 53.656	3.4457	+ .0019	N. 16 17 33.16	5.937	- .042
$\pi$ Argûs -	2.7	K 5	7 14 23.275	+ 2.1198	- .0008	S. 36 57 24.92	- 6.392	- .010
$\delta$ Geminorum -	3.5	F 0	7 15 28.016	+ 3.5870	- .0010	N. 22 7 37.93	6.481	- .015
$\delta$ Volantis -	4.0	F 5	7 16 52.856	- 0.0216	+ .0004	S. 67 48 52.36	6.599	- .006
$\eta$ Canis Maj. -	2.4	B 5 p	7 21 0.575	+ 2.3735	- .0005	S. 29 9 0.04	6.939	+ .013
$\beta$ Canis Min. -	3.1	B 8	7 22 55.325	3.2583	- .0032	N. 8 26 51.27	7.095	- .047
$\sigma$ Argûs -	3.3	K 5	7 26 45.309	+ 1.9091	- .0072	S. 43 8 34.19	- 7.407	+ .180
$\alpha$ Geminorum -	2.0	A 0	7 29 37.565	3.8466	- .0144	N. 32 3 40.52	7.640	- .082
Q Carinæ -	4.9	K 5	7 33 43.643	1.4829	- .0045	S. 52 21 34.53	7.973	- .052
$\alpha$ Canis Min. -	0.5	F 5	7 35 13.185	+ 3.1889	- .0472	N. 5 25 32.78	8.090	- 1.037
A Octantis -	7.8	A 0	7 36 7.763	- 47.8699	- .0399	S. 88 37 39.22	8.163	+ .009
26 Monocerotis	4.1	K 0	7 37 31.225	+ 2.8719	- .0057	S. 9 22 5.66	- 8.274	- .021
$\beta$ Geminorum -	1.2	K 0	7 40 32.745	3.7218	- .0470	N. 28 12 56.84	8.515	- .054
$\xi$ Argûs -	3.5	G 0	7 46 0.828	2.5237	- .0004	S. 24 39 47.25	8.947	.000
$\chi$ Geminorum -	5.0	K 0	7 58 43.887	3.6905	- .0012	N. 28 0 50.78	9.926	- .053
$\zeta$ Argûs -	2.3	O d	8 0 50.506	2.1112	- .0044	S. 39 46 58.60	10.086	- .005
$\rho$ Argûs -	2.9	F 5	8 4 13.310	+ 2.5612	- .0065	S. 24 4 42.59	- 10.340	+ .052
$\gamma$ Argûs -	2.2	O a p	8 7 7.796	1.8501	- .0003	S. 47 6 22.58	10.558	- .011
20 Puppis -	5.1	G 5	8 9 44.861	2.7588	- .0009	S. 15 33 8.29	10.751	+ .001
$\beta$ Cancri -	3.8	K 2	8 12 17.192	3.2587	- .0035	N. 9 25 37.03	10.939	- .052
$\text{d}^1$ Cancri -	5.9	F 0	8 18 54.008	3.4420	- .0038	N. 18 35 1.11	11.420	- .031
4 B Ursæ Min.	7.0	A 0	8 20 43.867	+ 58.3297	- .0384	N. 88 52 3.51	- 11.550	+ .017
$\epsilon$ Argûs -	1.7	K o p	8 20 54.881	1.2373	- .0042	S. 59 15 29.32	11.563	+ .008
30 Monocerotis	4.0	A 0	8 21 45.865	3.0033	- .0039	S. 3 39 3.59	11.624	- .019
$\text{o}$ Ursæ Maj. -	3.5	G 0	8 23 47.974	5.0228	- .0160	N. 60 58 49.45	11.768	- .112
$\eta$ Cancri -	5.5	K 0	8 28 12.078	3.4759	- .0025	N. 20 42 25.51	12.077	- .055
$\gamma$ Cancri -	4.7	A 0	8 38 46.536	+ 3.4829	- .0071	N. 21 44 59.99	- 12.804	- .043
$\alpha$ Mali -	3.7	B 2	8 40 27.440	2.4115	- .0003	S. 32 54 16.17	12.915	+ .011
$\delta$ Argûs -	2.0	A 0	8 42 32.760	+ 1.6551	- .0035	S. 54 25 20.22	- 13.054	- .100

PROPER NAMES.— $\alpha$  Canis Majoris - *Sirius*.

$\alpha$  Canis Minoris - *Procyon*.

$\alpha$  Geminorum - *Castor*.

$\beta$  Geminorum - *Pollux*.

VARIABLE STARS.— $\zeta$  Geminorum. The limits of magnitude are 3.7 and 4.3. Period 10.2 days.

NOTES.— $\alpha$  Canis Majoris. The mean place is that of the centre of the orbit: the apparent places, those of the brighter star. The apparent places are affected with a parallax of  $0''.38$ .

$\alpha$  Geminorum. Both mean and apparent places refer to the brighter star.

$\alpha$  Canis Minoris. The mean place is that of the centre of the orbit: the apparent places, those of the brighter star. The apparent places are affected with a parallax of  $0''.33$ .

# 206 MEAN PLACES OF STARS, 1922.

FOR JANUARY 0d.642

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			h m s	s	s	N. ° ' "		
ε Hydræ - -	3.5	F 8	8 42 38.831	+ 3.1919	- .0126	N. 6 42 21.19	- 13.061	- .050
ζ Hydræ - -	3.3	K 0	8 51 16.374	3.1799	- .0060	N. 6 14 35.76	13.624	+ .007
ι Ursæ Maj. -	3.1	A 5	8 53 52.562	4.1631	- .0435	N. 48 20 56.10	13.790	- .248
α Cancrī - -	4.3	A 3	8 54 13.414	3.2815	+ .0024	N. 12 9 37.70	13.812	- .042
κ Cancrī - -	5.1	B 8	9 3 31.485	3.2533	- .0013	N. 10 58 58.51	14.392	- .013
ξ Cancrī - -	5.2	G 5	9 4 52.722	+ 3.4530	+ .0011	N. 22 21 42.71	- 14.474	+ .002
λ Argûs - -	2.2	K 5	9 5 7.582	2.2080	- .0015	S. 43 7 2.24	14.487	- .007
β Argûs - -	1.8	A 0	9 12 21.006	0.6984	- .0310	S. 69 23 44.94	14.917	+ .094
83 Cancrī - -	6.6	F 5	9 14 37.896	3.3602	- .0076	N. 18 2 12.44	15.050	- .136
ι Argûs - -	2.3	F 0	9 15 0.099	1.6094	- .0035	S. 58 56 51.17	15.071	+ .002
40 Lyncis - -	3.3	K 5	9 16 18.516	+ 3.6795	- .0178	N. 34 43 23.77	- 15.145	+ .012
h Mali - - -	4.9	M a	9 18 2.141	2.6564	- .0048	S. 25 37 59.77	15.245	- .032
κ Argûs - -	2.6	B 3	9 19 41.793	1.8586	- .0033	S. 54 40 38.64	15.338	- .018
α Hydræ - -	2.2	K 2	9 23 45.294	2.9496	- .0010	S. 8 19 11.06	15.564	+ .033
ψ Argûs - -	3.6	F 5	9 27 37.480	2.3779	- .0181	S. 40 7 30.14	15.775	+ .038
θ Ursæ Maj. -	3.3	F 8	9 27 39.054	+ 4.1291	- .1026	N. 52 2 1.55	- 15.777	- .542
ξ Leonis - -	5.1	G 5	9 27 44.629	3.2425	- .0063	N. 11 38 45.60	15.783	- .084
N Velorum - -	3.0	K 5	9 28 51.111	1.8267	- .0036	S. 56 41 23.09	15.841	+ .001
κ Hydræ - -	5.0	B 3	9 36 34.014	2.8779	- .0018	S. 13 58 39.64	16.246	- .011
o Leonis - -	3.8	F 5 p	9 36 59.394	3.2139	- .0094	N. 10 14 52.39	16.268	- .037
ε Leonis - -	3.1	G o p	9 41 25.644	+ 3.4131	- .0034	N. 24 8 2.49	- 16.491	- .022
μ Leonis - -	4.1	K 0	9 48 19.885	3.4328	- .0162	N. 26 22 30.09	16.827	- .056
π Leonis - -	4.9	M a	9 56 5.579	3.1746	- .0029	N. 8 25 8.66	17.186	- .027
α Leonis - -	1.3	B 8	10 4 13.209	3.2144	- .0169	N. 12 20 56.31	17.541	- .002
q Velorum - -	4.1	A 2	10 11 27.454	2.5290	- .0153	S. 41 44 6.29	17.838	+ .032
22 Sextantis -	5.4	F 0	10 13 45.273	+ 2.9922	- .0106	S. 7 40 44.06	- 17.930	+ .004
q Carinæ - -	3.4	K 5	10 14 28.533	2.0042	- .0045	S. 60 56 31.79	17.958	+ .001
γ Leonis (1st *)	2.6	K 0	10 15 40.493	3.2892	+ .0212	N. 20 14 11.96	18.005	- .152
μ Ursæ Maj. -	3.2	K 5	10 17 41.368	3.5902	- .0068	N. 41 53 32.50	18.080	+ .027
μ Hydræ - -	4.1	K 5	10 22 19.040	2.9097	- .0089	S. 16 26 15.30	18.252	- .079
α Antliæ - -	4.4	K 5	10 23 34.829	+ 2.7491	- .0060	S. 30 40 14.13	- 18.297	- .023
ρ Leonis - -	3.9	B o p	10 28 42.346	+ 3.1614	- .0006	N. 9 42 30.35	18.476	- .005
10 G Octantis -	6.7	A 0	10 35 45.132	- 3.2952	- .0096	S. 85 41 13.78	18.706	- .023
34 Sextantis -	6.6	F 5	10 38 35.892	+ 3.1052	- .0059	N. 3 59 28.19	18.795	+ .028
θ Argûs - -	3.0	B 0	10 40 10.155	2.1381	- .0043	S. 63 59 10.03	18.841	- .027
η Argûs - -	var.	Pec	10 42 1.843	+ 2.3227	- .0002	S. 59 16 27.09	- 18.897	- .009
μ Argûs - -	2.8	G 5	10 43 24.631	2.5683	+ .0066	S. 49 0 29.01	18.936	- .081
l Leonis - -	5.3	A 0	10 45 9.567	3.1558	+ .0001	N. 10 57 29.59	18.986	- .033
ν Hydræ - -	3.3	K 0	10 45 46.518	2.9525	+ .0066	S. 15 47 6.64	19.003	+ .195
ι Antliæ - -	4.7	K 0	10 53 4.779	2.7858	+ .0062	S. 36 43 5.54	19.197	- .137
d Leonis - -	5.1	K 0	10 56 31.976	+ 3.0985	+ .0004	N. 4 2 11.58	- 19.282	- .022
β Ursæ Maj. -	2.4	A 0	10 57 8.784	3.6258	+ .0105	N. 56 48 3.02	19.296	+ .026
α Ursæ Maj. -	2.0	K 0	10 58 55.757	+ 3.7394	- .0164	N. 62 10 20.67	19.337	- .071
η Octantis - -	6.3	A 0	10 59 53.418	- 0.3232	- .0577	S. 84 10 27.43	19.359	- .005
χ Leonis - -	4.7	F 0	11 0 59.684	+ 3.1191	- .0234	N. 7 45 29.27	- 19.384	- .041

PROPER NAMES.—α Leonis - *Regulus*.

α Ursæ Majoris - *Dubhe*.

VARIABLE STARS.—η Argûs. The limits of magnitude are > 1, and 7.4. Period irregular.

# MEAN PLACES OF STARS, 1922. 207

FOR JANUARY *od.642*

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			<i>h m s</i>	<i>s</i>	<i>s</i>			
$\psi$ Ursæ Maj. -	3.2	K o	11 5 17.155	+ 3.3879	- .0053	N. 44 55 19.27	- 19.476	- .033
$\beta$ Crateris -	4.5	A 2	11 7 49.166	2.9484	.0000	S. 22 23 59.56	19.528	- .106
$\delta$ Leonis -	2.6	A 2	11 9 57.797	3.1835	+ .0108	N. 20 57 4.47	19.569	- .141
$\theta$ Leonis -	3.4	A o	11 10 8.910	3.1547	- .0049	N. 15 51 22.04	19.572	- .085
$\delta$ Crateris -	3.8	K o	11 15 26.364	3.0067	- .0088	S. 14 21 22.54	19.667	+ .195
$\tau$ Leonis -	5.2	K o	11 23 55.584	+ 3.0848	+ .0008	N. 3 17 9.61	- 19.797	- .017
$\lambda$ Draconis -	4.1	M a	11 26 47.587	3.5961	- .0072	N. 69 45 42.28	19.835	- .021
$\xi$ Hydræ -	3.7	G 5	11 29 9.739	2.9632	- .0158	S. 31 25 33.60	19.863	- .055
$\lambda$ Centauri -	3.3	B 9	11 32 10.403	2.7606	- .0073	S. 62 35 17.49	19.897	- .027
$\nu$ Leonis -	4.5	K o	11 32 57.299	3.0716	.0000	S. 0 23 34.67	19.906	+ .039
$\nu$ Virginis -	4.2	M a	11 41 51.057	+ 3.0857	- .0015	N. 6 57 59.68	- 19.983	- .186
$\beta$ Leonis -	2.2	A 2	11 45 4.963	3.0960	- .0341	N. 15 0 29.32	20.003	- .118
$\beta$ Virginis -	3.8	F 8	11 46 37.936	3.0758	+ .0494	N. 2 12 15.74	20.011	- .275
B Centauri -	4.7	K o	11 47 14.252	2.9991	- .0111	S. 44 44 22.79	20.014	- .046
$\gamma$ Ursæ Maj. -	2.5	A o	11 49 44.193	3.1555	+ .0115	N. 54 7 42.37	20.025	+ .004
$\pi$ Virginis -	4.6	A 3	11 56 52.551	+ 3.0750	- .0009	N. 7 2 57.35	- 20.043	- .032
$\alpha$ Virginis -	4.2	G 5	12 1 14.192	3.0716	- .0148	N. 9 9 57.88	20.044	+ .032
$\delta$ Centauri -	2.9	B 3 <i>p</i>	12 4 18.472	3.1029	- .0050	S. 50 17 17.55	20.041	- .030
$\epsilon$ Corvi -	3.2	K o	12 6 6.616	3.0873	- .0051	S. 22 11 9.77	20.038	+ .003
$\delta$ Crucis -	3.1	B 3	12 10 59.618	3.1766	- .0051	S. 58 18 54.72	20.022	- .027
$\delta$ Ursæ Maj. -	3.4	A 2	12 11 34.532	+ 2.9670	+ .0149	N. 57 27 57.43	- 20.019	+ .005
$\gamma$ Corvi -	2.8	B 8	12 11 47.529	3.0939	- .0112	S. 17 6 32.18	20.018	+ .017
$\beta$ Chamæleontis -	4.4	B 5	12 13 44.106	3.4799	- .0188	S. 78 52 44.90	20.009	+ .017
6 B Ursæ Min. -	6.3	F o	12 14 30.387	0.4805	- .0708	N. 88 7 56.35	20.005	+ .058
$\eta$ Virginis -	4.0	A o	12 15 54.915	3.0731	- .0036	S. 0 14 0.43	19.997	- .027
$\alpha$ Crucis -	1.6	B 1	12 22 14.757	+ 3.3233	- .0064	S. 62 40 1.38	- 19.951	- .039
$\delta$ Corvi -	3.1	A o	12 25 49.574	3.1160	- .0140	S. 16 4 52.82	19.917	- .149
$\gamma$ Crucis -	1.6	M b	12 26 49.722	3.3101	+ .0026	S. 56 40 36.01	19.908	- .278
$\beta$ Corvi -	2.8	G 5	12 30 17.136	3.1474	- .0008	S. 22 57 56.07	19.871	- .061
$\alpha$ Muscæ -	2.9	B 3	12 32 30.804	3.5575	- .0088	S. 68 42 21.55	19.843	- .029
$\gamma$ Centauri -	2.4	A o	12 37 12.435	+ 3.3172	- .0196	S. 48 31 54.10	- 19.781	- .020
$\gamma$ Virginis (mean) -	2.9	F o	12 37 42.413	3.0767	- .0375	S. 1 1 18.74	19.774	+ .005
$\rho$ Virginis -	5.0	A o	12 37 56.234	3.0312	+ .0059	N. 10 39 54.49	19.770	- .107
$\beta$ Muscæ -	3.3	B 3	12 41 28.825	3.6587	- .0053	S. 67 40 53.08	19.718	- .031
$\beta$ Crucis -	1.5	B 1	12 43 9.073	3.4943	- .0064	S. 59 15 45.77	19.691	- .033
35 Virginis -	6.7	M a	12 43 53.104	+ 3.0550	- .0004	N. 3 59 54.27	- 19.678	- .012
31 Comæ -	5.1	G o	12 47 54.024	2.9256	- .0023	N. 27 57 53.34	19.609	- .024
$\psi$ Virginis -	4.9	M b	12 50 17.654	3.1195	- .0024	S. 9 6 56.40	19.564	- .028
$\epsilon$ Ursæ Maj. -	1.7	A o <i>p</i>	12 50 36.171	2.6325	+ .0138	N. 56 22 58.60	19.558	- .013
$\delta$ Virginis -	3.7	M a	12 51 40.413	3.0528	- .0318	N. 3 49 15.79	19.538	- .060
12 Canum Ven. -	2.9	A o <i>p</i>	12 52 22.906	+ 2.8299	- .0203	N. 38 44 21.60	- 19.524	+ .049
$\epsilon$ Virginis -	3.0	K o	12 58 17.646	3.0050	- .0186	N. 11 22 41.02	19.400	+ .015
$\theta$ Virginis -	4.4	A o	13 5 54.553	3.1067	- .0029	S. 5 7 22.59	19.222	- .040
$\gamma$ Hydræ -	3.3	G 5	13 14 40.620	3.2522	+ .0046	S. 22 45 37.44	18.990	- .053
$\iota$ Centauri -	2.9	A 2	13 16 12.281	+ 3.3932	- .0294	S. 36 18 4.64	- 18.947	- .097

PROPER NAMES.— $\beta$  Leonis - *Denebola*.

NOTE.— $\alpha$  Crucis. Both mean and apparent places are those of the brighter star.

# 208 MEAN PLACES OF STARS, 1922.

FOR JANUARY 0d.642

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			h m s	s	s			
ζ <sup>1</sup> Ursæ Maj.	- 2.4	A o p	13 20 47.356	+ 2.4056	+ 0.153	N. 55° 19' 56.45	- 18.812	- 0.30
α Virginis	- 1.2	B 2	13 21 4.878	3.1607	- 0.028	S. 10 45 16.39	18.804	- 0.32
ι Virginis	- 5.6	K 2	13 22 35.736	3.1755	- 0.096	S. 12 18 7.58	18.757	- 0.23
ζ Virginis	- 3.4	A 2	13 30 43.009	3.0745	- 0.195	S. 0 11 51.07	18.495	+ 0.39
ε Centauri	- 2.6	B 1	13 34 56.043	3.7883	- 0.039	S. 53 4 13.88	18.350	- 0.39
m Virginis	- 5.2	M a	13 37 30.929	+ 3.1533	- 0.073	S. 8 18 35.71	- 18.256	+ 0.32
τ Boötis	- 4.5	F 5	13 43 33.325	2.8849	- 0.341	N. 17 50 41.73	18.033	+ 0.26
η Ursæ Maj.	- 1.9	B 3	13 44 28.179	2.3791	- 0.118	N. 49 42 7.45	17.998	- 0.23
μ Centauri	- 3.3	B 2 p	13 44 54.578	3.6061	- 0.028	S. 42 5 8.15	17.981	- 0.19
ζ Centauri	- 3.1	B 2 p	13 50 39.862	3.7359	- 0.070	S. 46 54 18.51	17.753	- 0.64
η Boötis	- 2.8	G o	13 50 58.252	+ 2.8611	- 0.044	N. 18 47 17.43	- 17.741	- 0.363
τ Virginis	- 4.3	A 2	13 57 40.526	3.0508	+ 0.010	N. 1 55 17.08	17.460	- 0.29
β Centauri	- 0.9	B 1	13 58 18.281	4.2151	- 0.033	S. 59 59 50.89	17.433	- 0.33
π Hydræ	- 3.5	K o	14 1 55.472	3.4079	+ 0.030	S. 26 18 26.44	17.275	- 0.153
θ Centauri	- 2.3	K o	14 2 5.124	3.5656	- 0.437	S. 35 59 12.83	17.268	- 0.525
94 Virginis	- 6.6	A o	14 2 9.765	+ 3.1745	- 0.010	S. 8 31 12.28	- 17.263	+ 0.009
α Draconis	- 3.6	A o	14 2 16.676	1.6319	- 0.071	N. 64 44 53.76	17.259	+ 0.11
κ Virginis	- 4.3	K o	14 8 43.942	3.1971	+ 0.006	S. 9 54 40.78	16.965	+ 0.132
α Boötis	- 0.2	K o	14 12 6.179	2.8136	- 0.779	N. 19 35 16.31	16.806	- 2.004
2 Libræ	- 6.3	K o	14 19 13.599	3.2261	- 0.014	S. 11 21 30.56	16.457	- 0.67
f Boötis	- 5.4	A 5	14 22 49.654	+ 2.7954	- 0.052	N. 19 34 36.77	- 16.276	+ 0.15
ρ Boötis	- 3.8	K o	14 28 28.140	2.5937	- 0.073	N. 30 42 47.35	15.983	+ 0.113
γ Boötis	- 3.0	F o	14 28 56.285	2.4261	- 0.091	N. 38 38 55.81	15.959	+ 0.145
η Centauri	- 2.7	B 3 p	14 30 32.817	3.8028	- 0.032	S. 41 48 57.49	15.873	- 0.32
α Centauri	- 0.3	G o	14 34 17.342	4.5463	- 0.4865	S. 60 30 51.50	15.671	+ 0.721
α Circini	- 3.4	F o	14 36 10.930	+ 4.8485	- 0.320	S. 64 38 11.44	- 15.568	- 0.238
α Lupi	- 2.9	B 2	14 36 43.984	3.9799	- 0.020	S. 47 3 15.90	15.537	- 0.36
ε Boötis	- 2.7	K o p	14 41 34.836	2.6238	- 0.035	N. 27 24 8.26	15.265	+ 0.009
α Libræ	- 2.9	A 2	14 46 33.580	+ 3.3226	- 0.078	S. 15 43 6.53	14.980	- 0.77
β Ursæ Min.	- 2.2	K 5	14 50 55.059	- 0.1912	- 0.065	N. 74 28 27.21	14.725	+ 0.03
ξ <sup>2</sup> Libræ	- 5.6	K o	14 52 31.936	+ 3.2520	- 0.006	S. 11 5 44.71	- 14.627	- 0.001
β Lupi	- 2.8	B 2 p	14 53 24.753	3.9228	- 0.070	S. 42 49 15.29	14.576	- 0.62
κ Centauri	- 3.4	B 3	14 54 4.767	3.8953	- 0.021	S. 41 47 31.96	14.535	- 0.33
β Boötis	- 3.6	G 5	14 59 0.482	2.2636	- 0.036	N. 40 41 51.04	14.235	- 0.40
γ Scorpii	- 3.4	M a	14 59 30.041	3.5119	- 0.056	S. 24 58 34.50	14.205	- 0.48
ψ Boötis	- 4.7	K o	15 1 6.186	+ 2.5837	- 0.133	N. 27 15 3.60	- 14.105	- 0.14
57 B Ursæ Min.	7.2	K o	15 2 5.004	- 19.0627	- 0.070	N. 87 32 0.69	14.044	+ 0.31
ζ Lupi	- 3.5	K o	15 6 40.289	+ 4.3081	- 0.126	S. 51 48 11.80	13.755	- 0.66
ι Libræ	- 4.7	A o p	15 7 46.268	3.4185	- 0.032	S. 19 29 51.16	13.685	- 0.47
γ Triang. Aust.	- 3.1	A o	15 11 36.156	5.5762	- 0.137	S. 68 23 34.65	13.438	- 0.42
δ Boötis	- 3.5	K o	15 12 21.503	+ 2.4119	+ 0.075	N. 33 36 17.98	- 13.390	- 0.125
β Libræ	- 2.7	B 8	15 12 48.420	3.2322	- 0.066	S. 9 5 45.69	13.360	- 0.24
o <sup>2</sup> Libræ	- 6.7	K 2	15 18 40.554	+ 3.3431	- 0.005	S. 14 51 24.03	12.972	+ 0.03
γ <sup>2</sup> Ursæ Min.	- 3.1	A 2	15 20 50.497	- 0.1086	- 0.020	N. 72 6 41.42	12.828	+ 0.13
ι Draconis	- 3.5	K o	15 23 11.662	+ 1.3329	+ 0.014	N. 59 14 19.65	- 12.670	+ 0.10

PROPER NAMES.—α Virginis - *Spica*.

α Boötis - *Arcturus*.

NOTE.—α Centauri. The mean place is that of the centre of gravity of the system: the apparent places, those of the brighter star. The apparent places are affected with a parallax of 0".75.

# MEAN PLACES OF STARS, 1922. 209

FOR JANUARY *od.642*

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>s</sup>	<sup>s</sup>			
32 Libræ -	5.9	K o	15 23 51.250	+ 3.3792	+ .0006	S. 16° 26' 44".08	- 12.623	- .043
ρ Octantis -	5.7	A 2	15 25 3.593	13.3513	+ .0843	S. 84 12 32.89	12.543	+ .081
113 G Lupi -	3.0	B 3	15 29 56.171	3.9912	- .0020	S. 40 54 21.37	12.207	- .049
α Coronæ Bor. -	2.3	A o	15 31 23.089	2.5306	+ .0090	N. 26 58 34.74	12.106	- .100
α Serpentis -	2.8	K o	15 40 25.468	2.9446	+ .0089	N. 6 40 12.33	11.467	+ .043
μ Serpentis -	3.6	A o	15 45 32.850	+ 3.1348	- .0058	S. 3 11 33.05	- 11.097	- .028
ζ Ursæ Min. -	4.3	A 2	15 46 48.717	- 2.1980	+ .0082	N. 78 2 6.36	11.004	- .004
ε Serpentis -	3.8	A o	15 46 55.568	+ 2.9807	+ .0081	N. 4 42 42.18	10.996	+ .070
β Triang. Aust. -	3.0	F o	15 48 15.311	5.2922	- .0290	S. 63 11 29.53	10.899	- .408
γ Serpentis -	3.9	F 8	15 52 50.947	2.7489	+ .0212	N. 15 54 54.56	10.559	- 1.295
π Scorpii -	3.0	B 2 p	15 54 7.723	+ 3.6260	- .0015	S. 25 53 27.00	- 10.464	- .037
δ Scorpii -	2.5	B 1 p	15 55 43.046	3.5445	- .0011	S. 22 24 3.14	10.345	- .035
β <sup>1</sup> Scorpii -	2.9	B 1	16 0 53.861	3.4856	- .0011	S. 19 35 34.97	9.954	- .028
δ Ophiuchi -	3.0	M a	16 10 15.365	3.1452	- .0031	S. 3 29 40.16	9.236	- .144
γ <sup>2</sup> Normæ -	4.1	K o	16 13 59.563	4.4962	- .0216	S. 49 57 56.39	8.944	- .064
ε Ophiuchi -	3.3	K o	16 14 11.532	+ 3.1670	+ .0054	S. 4 30 12.34	- 8.929	+ .037
σ Scorpii -	3.1	B 1	16 16 26.622	3.6438	- .0011	S. 25 24 25.00	8.752	- .033
γ Herculis -	3.8	F o	16 18 28.704	2.6491	- .0034	N. 19 20 7.06	8.592	+ .037
η Draconis -	2.9	G 5	16 22 55.934	0.8111	- .0020	N. 61 41 25.54	8.238	+ .058
α Scorpii -	1.2	M a p	16 24 37.297	3.6758	- .0006	S. 26 15 36.48	8.104	- .028
β Herculis -	2.8	K o	16 26 51.919	+ 2.5853	- .0076	N. 21 39 30.72	- 7.923	- .025
λ Ophiuchi -	3.9	A o	16 26 58.670	3.0266	- .0023	N. 2 9 12.27	7.914	- .090
τ Scorpii -	2.9	B o	16 31 1.386	3.7320	- .0011	S. 28 3 19.91	7.588	- .033
ζ Ophiuchi -	2.7	B o	16 32 51.700	3.3007	+ .0007	S. 10 24 36.81	7.439	+ .022
24 Scorpii -	5.0	K o	16 37 3.553	3.4690	- .0019	S. 17 35 32.63	7.097	- .003
ζ Herculis -	3.0	G o	16 38 20.725	+ 2.2980	- .0364	N. 31 44 35.84	- 6.990	+ .390
η Herculis -	3.6	K o	16 40 13.264	2.0529	+ .0031	N. 39 4 11.08	6.838	- .093
α Triang. Aust. -	1.9	K 2	16 40 23.393	6.3269	+ .0028	S. 68 53 11.94	6.824	- .049
ε Scorpii -	2.4	K o	16 45 6.430	3.9313	- .0505	S. 34 9 11.27	6.434	- .264
ζ Aræ -	3.1	K 5	16 52 9.230	+ 4.9583	- .0016	S. 55 52 7.44	5.847	- .049
ε Ursæ Min. -	4.4	G 5	16 53 54.271	- 6.2410	+ .0057	N. 82 10 4.35	- 5.701	- .001
κ Ophiuchi -	3.4	K o	16 53 58.507	+ 2.8584	- .0199	N. 9 29 42.82	5.695	- .011
30 Ophiuchi -	5.0	K o	16 56 56.815	3.1652	- .0018	S. 4 6 24.23	5.443	- .076
ε Herculis -	3.9	A o	16 57 18.279	2.2984	- .0036	N. 31 2 25.31	5.415	+ .023
η Ophiuchi -	2.6	A o	17 5 54.139	3.4362	+ .0017	S. 15 37 46.28	4.687	+ .091
ζ Draconis -	3.2	B 5	17 8 33.492	+ 0.1724	- .0021	N. 65 48 38.05	- 4.462	+ .018
α Herculis -	var.	M b	17 11 5.403	2.7355	- .0008	N. 14 28 41.34	4.245	+ .029
δ Herculis -	3.2	A o	17 11 49.612	2.4653	- .0019	N. 24 55 48.86	4.183	- .158
π Herculis -	3.4	K 2	17 12 19.758	2.0911	- .0025	N. 36 53 46.41	4.139	- .001
θ Ophiuchi -	3.4	B 3	17 17 13.031	3.6829	- .0006	S. 24 55 22.98	3.720	- .036
β Aræ -	2.8	K 2	17 18 48.734	+ 4.9828	- .0004	S. 55 27 27.93	- 3.583	- .027
σ Ophiuchi -	4.4	K o	17 22 38.632	2.9757	+ .0002	N. 4 12 25.62	3.251	+ .008
ν Scorpii -	2.8	B 3	17 25 27.389	4.0769	- .0024	S. 37 14 6.15	3.010	- .039
α Aræ -	3.0	B 3 p	17 25 48.541	+ 4.6374	- .0036	S. 49 48 57.61	- 2.980	- .083

PROPER NAMES.—α Scorpii - *Antares*.

VARIABLE STARS.—α Herculis. The limits of magnitude are 3.1 and 3.9. Period irregular.

# 210 MEAN PLACES OF STARS, 1922.

FOR JANUARY *od.642*

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			<sup>h</sup> <sup>m</sup> <sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>°</sup> <sup>'</sup> <sup>″</sup>		
λ Scorpii -	1.7	B 2	17 28 18.589	+ 4.0718	- .0003	S. 37 2 53.63	- 2.763	- .027
β Draconis -	3.0	G 0	17 28 40.165	1.3563	- .0017	N. 52 21 30.82	2.732	+ .009
α Ophiuchi -	2.1	A 5	17 31 18.777	2.7760	+ .0080	N. 12 36 56.40	2.502	- .235
θ Scorpii -	2.0	F 0	17 31 42.623	4.3072	- .0008	S. 42 56 58.83	2.468	- .009
κ Scorpii -	2.5	B 2	17 37 5.362	4.1492	- .0015	S. 38 59 28.21	2.000	- .026
η Pavonis -	3.6	K 0	17 38 4.330	+ 5.8854	- .0027	S. 64 41 19.14	- 1.915	- .080
β Ophiuchi -	2.9	K 0	17 39 37.128	2.9657	- .0026	N. 4 35 55.64	1.781	+ .158
ι Scorpii -	3.1	F 5 <i>p</i>	17 42 7.610	4.1946	- .0011	S. 40 5 53.30	1.562	- .003
μ Herculis -	3.5	G 5	17 43 24.309	2.3711	- .0238	N. 27 45 55.38	1.451	- .749
89 Herculis -	5.5	F 2	17 52 16.414	2.4196	+ .0013	N. 26 3 41.36	0.674	+ .006
ν Ophiuchi -	3.5	K 0	17 54 43.904	+ 3.3026	- .0006	S. 9 45 54.89	- 0.460	- .120
γ Draconis -	2.4	K 5	17 54 47.680	+ 1.3933	- .0006	N. 51 29 50.93	0.455	- .024
δ Ursæ Min. -	4.4	A 0	17 57 23.820	- 19.5124	+ .0171	N. 86 36 50.63	- 0.228	+ .048
γ Sagittarii -	3.1	K 0	18 0 47.742	+ 3.8576	- .0055	S. 30 25 35.27	+ 0.070	- .198
72 Ophiuchi -	3.7	A 2	18 3 39.064	2.8479	- .0045	N. 9 33 6.40	0.319	+ .087
μ Sagittarii -	4.0	B 8 <i>p</i>	18 9 5.878	+ 3.5874	- .0004	S. 21 4 49.94	+ 0.796	- .002
η Sagittarii -	3.2	M b	18 12 20.904	4.0705	- .0117	S. 36 47 11.28	1.080	- .163
δ Sagittarii -	2.8	K 0	18 16 0.023	3.8382	+ .0027	S. 29 51 45.38	1.398	- .032
γ Serpentis -	3.4	K 0	18 17 16.362	3.1407	- .0378	S. 2 55 12.42	1.509	- .692
ε Sagittarii -	2.0	A 0	18 18 59.662	3.9854	- .0041	S. 34 25 21.94	1.659	- .122
α Telescopii -	3.8	B 3	18 21 11.414	+ 4.4513	- .0017	S. 46 0 46.85	+ 1.850	- .068
λ Sagittarii -	2.9	K 0	18 23 9.401	3.7059	- .0037	S. 25 27 58.07	2.022	- .188
α Lyræ -	0.1	A 0	18 34 17.852	2.0138	+ .0177	N. 38 42 36.92	2.989	+ .280
4 H Scuti -	4.7	F 0	18 38 0.250	3.2845	+ .0020	S. 9 7 42.20	3.311	- .006
φ Sagittarii -	3.3	B 8	18 40 47.006	3.7450	+ .0034	S. 27 4 20.15	3.551	- .006
λ Pavonis -	4.4	B 2	18 44 59.611	+ 5.5670	- .0030	S. 62 16 43.70	+ 3.910	- .022
30 Sagittarii -	6.2	F 0	18 46 9.102	3.6085	- .0041	S. 22 15 8.97	4.012	- .024
β Lyræ -	var.	B 2 <i>p</i>	18 47 11.993	2.2144	+ .0004	N. 33 16 16.54	4.099	- .005
σ Sagittarii -	2.1	B 3	18 50 25.713	3.7200	- .0003	S. 26 23 42.22	4.375	- .075
ξ Sagittarii -	3.6	K 0	18 53 4.632	3.5775	+ .0018	S. 21 12 37.72	4.601	- .016
γ Lyræ -	3.3	A 0	18 56 1.515	+ 2.2442	- .0006	N. 32 34 53.93	+ 4.852	- .006
ε Aquilæ -	4.2	K 0	18 56 4.907	+ 2.7253	- .0042	N. 14 57 40.60	4.856	- .080
λ Ursæ Min. -	6.6	M b	18 56 36.628	- 73.0219	- .1122	N. 89 1 27.98	4.901	+ .005
ζ Sagittarii -	2.7	A 2	18 57 38.984	+ 3.8198	- .0021	S. 29 59 34.36	4.989	+ .002
ζ Aquilæ -	3.0	A 0	19 1 49.482	2.7577	- .0008	N. 13 44 47.29	5.342	- .099
τ Sagittarii -	3.4	K 0	19 2 4.306	+ 3.7512	- .0046	S. 27 47 8.67	+ 5.365	- .254
λ Aquilæ -	3.6	A 0	19 2 6.568	3.1854	- .0020	S. 5 0 1.84	5.366	- .083
α Coronæ Aust. -	4.1	A 2	19 4 9.970	4.0772	+ .0051	S. 38 1 39.30	5.539	- .118
π Sagittarii -	3.0	F 2	19 5 7.556	3.5689	- .0005	S. 21 8 55.76	5.620	- .036
ψ Sagittarii -	4.9	F 5	19 10 45.528	3.6771	+ .0025	S. 25 23 32.74	6.093	- .035
δ Draconis -	3.2	K 0	19 12 32.521	+ 0.0032	+ .0175	N. 67 31 27.48	+ 6.239	+ .088
ω Aquilæ -	5.1	A 5	19 14 9.315	2.8160	- .0002	N. 11 27 13.38	6.374	+ .014
59 G Telescopii -	5.6	K 2	19 21 32.637	4.8276	- .0009	S. 54 28 59.16	6.986	- .044
δ Aquilæ -	3.4	F 0	19 21 33.943	+ 3.0080	+ .0168	N. 2 57 29.49	+ 6.984	+ .082

PROPER NAMES.—α Lyræ - *Vega*.

VARIABLE STARS.—β Lyræ. The limits of magnitude are 3.4 and 4.1. Period 12.9 days.



# MEAN PLACES OF STARS, 1922. 211

FOR JANUARY 0<sup>d</sup>.642

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			h m s	s	s			
6 Vulpeculæ -	4.6	M a	19 25 27.555	+ 2.5055	- .0097	N. 24 30 21.68	+ 7.305	- .110
β Cygni -	3.2	K o p	19 27 34.521	2.4192	- .0002	N. 27 47 41.69	7.475	- .010
μ Aquilæ -	4.7	K o	19 30 16.769	2.9166	+ .0145	N. 7 12 44.79	7.695	- .146
h Sagittarii -	4.7	B 9	19 31 57.722	3.6478	+ .0045	S. 25 32 25.24	7.829	- .027
σ Octantis -	5.5	F o	19 35 29.770	92.1185	+ .1063	S. 89 12 49.57	8.113	.000
54 Sagittarii -	5.5	K o	19 36 15.358	+ 3.4336	+ .0046	S. 16 28 23.74	+ 8.176	- .047
44 G Octantis -	6.3	K o	19 41 43.924	11.1948	- .0055	S. 81 32 54.51	8.608	+ .009
f Sagittarii -	5.1	K o	19 41 48.801	3.5107	- .0099	S. 19 56 58.98	8.617	- .088
δ Cygni -	3.0	A o	19 42 32.277	1.8705	+ .0055	N. 44 56 22.79	8.672	+ .044
γ Aquilæ -	2.8	K 2	19 42 33.077	2.8512	+ .0007	N. 10 25 19.79	8.673	- .003
α Aquilæ -	0.9	A 5	19 46 58.659	+ 2.8910	+ .0360	N. 8 39 40.54	+ 9.020	+ .379
ι Sagittarii -	4.2	K o	19 49 52.922	4.1430	- .0017	S. 42 4 28.30	9.249	+ .045
β Aquilæ -	3.9	K o	19 51 28.909	2.9442	+ .0025	N. 6 12 39.48	9.371	- .481
g Sagittarii -	5.1	A o	19 53 31.689	3.4032	+ .0004	S. 15 41 57.34	9.531	- .081
c Sagittarii -	4.6	M b	19 57 51.860	3.6895	+ .0021	S. 27 55 40.22	9.860	+ .018
δ Pavonis -	3.6	G 5	20 1 5.074	+ 5.7121	+ .1923	S. 66 22 56.39	+ 10.104	- 1.129
θ Aquilæ -	3.4	A o	20 7 16.850	3.0937	+ .0020	S. 1 3 13.65	10.568	+ .006
4 Capricorni -	6.0	K o	20 13 26.524	3.5248	+ .0012	S. 22 3 7.05	11.025	- .033
α <sup>2</sup> Capricorni -	3.8	K o	20 13 43.696	3.3258	+ .0040	S. 12 47 15.34	11.044	+ .008
β Capricorni -	3.3	G o p	20 16 37.824	3.3697	+ .0023	S. 15 1 43.38	11.255	+ .006
γ Cygni -	2.3	F 8 p	20 19 25.711	+ 2.1524	+ .0004	N. 40 0 22.72	+ 11.456	+ .001
α Pavonis -	2.1	B 3	20 19 29.146	4.7601	.0000	S. 56 59 11.10	11.460	- .092
48 G Octantis -	7.1	A o	20 24 14.606	14.6642	+ .0296	S. 84 40 32.37	11.799	+ .034
ρ Capricorni -	5.0	F o	20 24 24.810	3.4251	- .0014	S. 18 4 20.99	11.811	- .016
ε Delphini -	4.0	B 5	20 29 29.209	2.8656	+ .0007	N. 11 2 14.07	12.167	- .025
α Indi -	3.2	K o	20 32 5.100	+ 4.2242	+ .0027	S. 47 33 53.30	+ 12.347	+ .053
α Delphini -	3.9	B 8	20 36 0.922	2.7821	+ .0047	N. 15 38 10.74	12.616	+ .017
β Pavonis -	3.6	A 5	20 37 56.871	5.4429	- .0079	S. 66 29 6.25	12.746	- .003
α Cygni -	1.3	A 2 p	20 38 46.343	2.0445	+ .0004	N. 45 0 3.36	12.802	- .002
ε Cygni -	2.6	K o	20 43 3.307	2.3983	+ .0294	N. 33 40 38.52	13.088	+ .327
ε Aquarii -	3.8	A o	20 43 27.298	+ 3.2470	+ .0017	S. 9 46 55.79	+ 13.115	- .030
μ Aquarii -	4.8	A 3	20 48 26.893	3.2346	+ .0025	S. 9 16 37.20	13.444	- .039
32 Vulpeculæ -	5.2	K 2	20 51 14.120	2.5568	- .0003	N. 27 45 37.01	13.622	+ .004
γ Microscopii -	4.7	G 5	20 56 30.687	3.6852	- .0004	S. 32 33 48.84	13.958	- .004
θ Capricorni -	4.2	A o	21 1 33.876	3.3693	+ .0051	S. 17 32 37.57	14.272	- .066
61 Cygni (1st *) -	5.6	K 5	21 3 23.893	+ 2.3360	+ .3496	N. 38 21 54.25	+ 14.383	+ 3.250
ξ Cygni -	3.4	K o	21 9 36.937	2.5526	- .0002	N. 29 54 22.47	14.756	- .061
α Equulei -	4.1	F 8 p	21 11 55.501	+ 2.9956	+ .0034	N. 4 55 28.60	14.892	- .085
B.A.C. 7504 -	7.4	A 3	21 15 14.023	- 12.2684	+ .0300	N. 86 43 0.13	15.084	+ .030
θ <sup>1</sup> Microscopii -	4.9	A 2 p	21 15 46.682	+ 3.8395	+ .0070	S. 41 8 23.87	15.115	+ .014
α Cephei -	2.6	A 5	21 16 43.196	+ 1.4121	+ .0224	N. 62 15 17.01	+ 15.169	+ .050
ι Capricorni -	4.3	K o	21 17 54.369	3.3409	+ .0022	S. 17 10 3.15	15.238	+ .004
γ Pavonis -	4.3	F 8	21 20 0.846	4.9768	+ .0153	S. 65 43 13.62	15.356	+ .784
ζ Capricorni -	3.9	G 5 p	21 22 13.041	+ 3.4288	+ .0004	S. 22 44 59.94	+ 15.479	+ .020

PROPER NAMES.—α Aquilæ - *Altair*.

α Cygni - *Deneb*.

NOTES.—α Aquilæ. The apparent places are affected with a parallax of 0".23.

61 Cygni. The apparent places are affected with a parallax of 0".30.

# 212 MEAN PLACES OF STARS, 1922.

FOR JANUARY <sup>od</sup>642

Star's Name.	Mag.	Spect.	Right Ascension.	Annual Precession.	Annual Proper Motion.	Declination.	Annual Precession.	Annual Proper Motion.
			h m s	s	s	° ' "		
β Aquarii -	3.1	G o	21 27 27.240	+ 3.1582	+ .0012	S. 5 54 54.37	+ 15.767	- .011
β Cephei -	3.3	B 1	21 27 39.654	0.7809	+ .0026	N. 70 13 5.13	15.778	+ .005
ξ Aquarii -	4.8	A 5	21 33 36.066	3.1876	+ .0075	S. 8 12 16.97	16.094	- .023
ε Pegasi -	2.5	K o	21 40 21.284	2.9445	+ .0016	N. 9 31 0.14	16.437	- .000
δ Capricorni -	3.0	A 5	21 42 44.266	3.2956	+ .0176	S. 16 28 55.00	16.556	- .297
γ Gruis -	3.2	B 8	21 49 12.614	+ 3.6313	+ .0077	S. 37 43 56.98	+ 16.869	- .021
16 Pegasi -	5.1	B 3	21 49 30.725	2.7283	+ .0005	N. 25 33 27.63	16.883	+ .006
α Aquarii -	3.2	G o	22 1 46.704	3.0808	+ .0010	S. 0 41 57.47	17.436	- .002
α Gruis -	2.2	B 5	22 3 19.434	3.7795	+ .0110	S. 47 20 22.82	17.503	- .174
ι Pegasi -	4.0	F 5	22 3 22.706	2.7697	+ .0219	N. 24 57 48.75	17.505	+ .022
ζ Cephei -	3.6	K o	22 8 8.758	+ 2.0771	+ .0018	N. 57 48 59.21	+ 17.705	+ .010
θ Aquarii -	4.3	K o	22 12 43.129	3.1593	+ .0074	S. 8 10 19.80	17.888	- .018
α Tucanæ -	2.9	K 2	22 13 10.150	4.1408	- .0118	S. 60 38 55.72	17.907	- .035
υ Octantis -	5.7	K o	22 17 9.823	12.1997	- .0400	S. 86 21 56.56	18.061	+ .074
γ Aquarii -	4.0	A o	22 17 37.680	3.0907	+ .0081	S. 1 46 50.78	18.079	+ .015
σ Aquarii -	4.9	A o	22 26 31.274	+ 3.1765	.0000	S. 11 4 39.02	+ 18.402	- .026
η Aquarii -	4.1	B 8	22 31 20.919	3.0773	+ .0057	S. 0 31 11.76	18.564	- .053
κ Aquarii -	5.3	K o	22 33 43.071	3.1126	- .0049	S. 4 37 50.67	18.642	- .113
ζ Pegasi -	3.6	B 8	22 37 34.283	2.9862	+ .0054	N. 10 25 25.39	18.763	- .014
β Gruis -	2.2	M b	22 38 1.010	3.5797	+ .0133	S. 47 17 35.24	18.776	- .026
η Pegasi -	3.1	G o	22 39 20.614	+ 2.8088	+ .0011	N. 29 48 45.93	+ 18.816	- .037
ε Gruis -	3.7	A 2	22 43 51.014	3.6252	+ .0093	S. 51 43 38.34	18.949	- .059
μ Pegasi -	3.7	K o	22 46 14.197	2.8829	+ .0109	N. 24 11 21.62	19.016	- .041
λ Aquarii -	3.8	M a	22 48 32.766	3.1303	+ .0002	S. 7 59 42.15	19.079	+ .035
δ Aquarii -	3.5	A 2	22 50 30.736	3.1889	- .0034	S. 16 14 9.60	19.131	- .026
α Piscis Aust.	1.3	A 3	22 53 20.649	+ 3.2943	+ .0252	S. 30 2 9.84	+ 19.203	- .171
β Piscium -	4.6	B 5	22 59 54.455	3.0521	+ .0008	N. 3 23 59.40	19.360	- .006
β Pegasi -	var.	M a	22 59 59.436	2.8914	+ .0146	N. 27 39 33.70	19.362	+ .135
α Pegasi -	2.6	A o	23 0 52.436	2.9828	+ .0040	N. 14 47 7.11	19.381	- .039
ε <sup>2</sup> Aquarii -	3.8	K o	23 5 17.383	3.1978	+ .0032	S. 21 35 46.07	19.477	+ .041
γ Tucanæ -	4.1	F 2	23 12 53.135	+ 3.5208	- .0057	S. 58 39 50.36	+ 19.623	+ .060
γ Piscium -	3.9	K o	23 13 7.279	3.0592	+ .0503	N. 2 51 20.85	19.627	+ .018
ψ <sup>3</sup> Aquarii -	5.2	A o	23 14 54.312	3.1190	+ .0027	S. 10 2 14.86	19.659	- .001
τ Pegasi -	4.7	A 5	23 16 46.417	2.9648	+ .0018	N. 23 18 47.24	19.690	- .012
κ Piscium -	4.9	A 2 p	23 22 56.035	+ 3.0696	+ .0056	N. 0 49 42.51	19.784	- .093
39 H Cephei -	5.6	F o	23 27 42.693	- 0.3668	+ .0644	N. 86 52 38.23	+ 19.846	+ .020
ι Phœnicis -	4.8	A 2 p	23 30 52.951	+ 3.2307	+ .0008	S. 43 2 47.71	19.884	- .004
ι Piscium -	4.3	G o	23 35 56.248	3.0600	+ .0246	N. 5 12 12.26	19.934	- .436
γ Cephei -	3.4	K o	23 36 8.069	2.4614	- .0173	N. 77 11 49.29	19.937	+ .157
λ Piscium -	4.6	A 5	23 38 3.962	3.0698	- .0092	N. 1 21 2.32	19.954	- .154
δ Sculptoris -	4.6	A o	23 44 51.876	+ 3.1207	+ .0059	S. 28 33 43.54	+ 20.001	- .133
φ Pegasi -	5.2	M a	23 48 31.023	3.0501	- .0013	N. 18 41 13.30	20.020	- .039
27 Piscium -	5.1	K o	23 54 40.780	3.0749	- .0037	S. 3 59 19.51	20.040	- .068
ω Piscium -	4.0	F 5	23 55 18.296	3.0697	+ .0102	N. 6 25 53.58	20.041	- .108
2 Ceti -	4.6	A o	23 59 44.702	+ 3.0732	+ .0012	S. 17 46 12.68	+ 20.045	- .004

PROPER NAMES.—α Piscis Australis - *Fomalhaut*.

α Pegasi - *Markab*.

VARIABLE STARS.—β Pegasi. The limits of magnitude are 2.2 and 2.7. Period irregular.

# APPARENT PLACES OF STARS, 1922. 213

Mean Midnight.		<i>t</i>	BESSEL'S DAY NUMBERS.			
			Log. A.	Log. B.	Log. C.	Log. D.
Jan.	1	0.00235	+8.97465	+0.98057	-0.54743	+1.30332
	6	0.01604	9.04442	0.97900	0.71199	1.29414
	11	0.02973	9.10305	0.97670	0.82835	1.28123
	16	0.04342	9.15299	0.97380	0.91723	1.26437
	21	0.05711	+9.19604	+0.97033	-0.98804	+1.24327
Feb.	26	0.07080	9.23331	0.96645	1.04587	1.21749
	31	0.08449	9.26581	0.96227	1.09379	1.18648
	5	0.09818	9.29430	0.95789	1.13378	1.14945
	10	0.11187	+9.31928	+0.95361	-1.16721	+1.10530
	15	0.12555	9.34137	0.94939	1.19504	1.05245
Mar.	20	0.13924	9.36099	0.94550	1.21796	0.98849
	25	0.15293	9.37850	0.94209	1.23649	0.90964
	2	0.16662	+9.39433	+0.93920	-1.25100	+0.80930
	7	0.18031	9.40878	0.93697	1.26179	0.67450
	12	0.19400	9.42219	0.93556	1.26905	0.47350
Apr.	17	0.20769	9.43482	0.93485	1.27293	+0.08138
	22	0.22138	+9.44695	+0.93505	-1.27352	-9.75420
	27	0.23507	9.45882	0.93606	1.27085	0.36784
	1	0.24876	9.47060	0.93795	1.26491	0.61007
	6	0.26245	9.48250	0.94052	1.25564	0.76199
May	11	0.27614	+9.49466	+0.94374	-1.24292	-0.87156
	16	0.28983	9.50714	0.94751	1.22657	0.95616
	21	0.30352	9.52004	0.95171	1.20634	1.02409
	26	0.31721	9.53336	0.95617	1.18186	1.07992
	1	0.33090	+9.54715	+0.96083	-1.15266	-1.12647
June	6	0.34459	9.56136	0.96553	1.11810	1.16555
	11	0.35828	9.57591	0.97009	1.07728	1.19847
	16	0.37197	9.59076	0.97449	1.02886	1.22614
	21	0.38566	+9.60583	+0.97850	-0.97099	-1.24920
	26	0.39935	9.62098	0.98216	0.90076	1.26815
July	31	0.41303	9.63616	0.98527	0.81340	1.28334
	5	0.42672	9.65125	0.98784	0.70024	1.29505
	10	0.44041	+9.66615	+0.98985	-0.54273	-1.30349
	15	0.45410	9.68078	0.99121	0.28796	1.30879
	20	0.46779	9.69503	0.99185	-9.57921	1.31103
July	25	0.48148	9.70886	0.99183	+0.07309	1.31026
	30	0.49517	+9.72217	+0.99114	+0.43726	-1.30646
	5	0.50886	+9.73492	+0.98976	+0.63052	-1.29959

# 214 APPARENT PLACES OF STARS, 1922.

Mean Midnight.		<i>t</i>	BESSEL'S DAY NUMBERS.				
			Log. A.	Log. B.	Log. C.	Log. D.	
July	5	0.50886	+9.73492	+0.98976	+0.63052	-1.29959	
	10	0.52255	9.74708	0.98780	0.76159	1.28954	
	15	0.53624	9.75862	0.98527	0.85981	1.27616	
	20	0.54993	9.76950	0.98221	0.93739	1.25923	
	25	0.56362	+9.77969	+0.97875	+1.00065	-1.23846	
	30	0.57731	9.78922	0.97497	1.05323	1.21342	
	Aug.	4	0.59100	9.79809	0.97090	1.09744	1.18360
		9	0.60469	9.80632	0.96666	1.13485	1.14827
	14	0.61838	+9.81393	+0.96242	+1.16652	-1.10637	
	19	0.63207	9.82098	0.95830	1.19325	1.05650	
	24	0.64576	9.82749	0.95437	1.21555	0.99651	
	29	0.65945	9.83352	0.95080	1.23387	0.92311	
Sept.	3	0.67314	+9.83913	+0.94765	+1.24851	-0.83073	
	8	0.68683	9.84439	0.94512	1.25968	0.70880	
	13	0.70052	9.84937	0.94320	1.26755	0.53343	
	18	0.71421	9.85415	0.94204	1.27220	-0.22696	
	23	0.72790	+9.85881	+0.94166	+1.27368	+8.77305	
	28	0.74159	9.86341	0.94204	1.27198	0.25744	
	Oct.	3	0.75527	9.86805	0.94333	1.26705	0.55023
		8	0.76896	9.87279	0.94525	1.25879	0.72180
	13	0.78265	+9.87770	+0.94792	+1.24704	+0.84236	
	18	0.79634	9.88283	0.95122	1.23156	0.93426	
	23	0.81003	9.88824	0.95501	1.21207	1.00751	
	28	0.82372	9.89395	0.95914	1.18814	1.06745	
Nov.	2	0.83741	+9.90000	+0.96355	+1.15926	+1.11730	
	7	0.85110	9.90639	0.96806	1.12463	1.15913	
	12	0.86479	9.91311	0.97255	1.08325	1.19431	
	17	0.87848	9.92016	0.97685	1.03364	1.22381	
	22	0.89217	+9.92748	+0.98085	+0.97366	+1.24831	
	27	0.90586	9.93504	0.98439	0.89994	1.26833	
	Dec.	2	0.91955	9.94278	0.98742	0.80674	1.28423
		7	0.93324	9.95066	0.98981	0.68320	1.29631
	12	0.94693	+9.95858	+0.99154	+0.50446	+1.30474	
	17	0.96062	9.96649	0.99249	+0.18772	1.30965	
	22	0.97431	9.97434	0.99264	-9.10278	1.31111	
	27	0.98800	9.98204	0.99196	0.25373	1.30913	
	32	1.00169	+9.98953	+0.99047	-0.53745	+1.30368	
	37	1.01538	+9.99677	+0.98836	-0.70526	+1.29467	

# APPARENT PLACES OF STARS, 1922. 215

## BESSEL'S DAY NUMBERS.

Mean Midnight.	Log. A.	Log. B.	Log. C.	Log. D.	Log. A'.	Log. B'.	
Jan.	1	+ 8.9747	+ 0.9806	- 0.5474	+ 1.3033	+ 7.472	- 8.342
	2	8.9897	0.9803	0.5860	1.3018	+ 7.295	- 8.643
	3	9.0041	0.9800	0.6213	1.3001	+ 6.790	- 8.763
	4	9.0180	0.9797	0.6539	1.2982	- 6.962	- 8.806
	5	9.0314	0.9794	0.6840	1.2962	- 7.392	- 8.771
	6	+ 9.0444	+ 0.9790	- 0.7120	+ 1.2941	- 7.582	- 8.633
	7	9.0569	0.9786	0.7382	1.2918	- 7.670	- 8.255
	8	9.0691	0.9781	0.7628	1.2894	- 7.690	+ 8.079
	9	9.0808	0.9777	0.7859	1.2868	- 7.634	+ 8.623
	10	9.0921	0.9772	0.8077	1.2841	- 7.460	+ 8.799
	11	+ 9.1031	+ 0.9767	- 0.8283	+ 1.2812	- 6.989	+ 8.857
	12	9.1137	0.9762	0.8479	1.2782	+ 6.998	+ 8.799
	13	9.1240	0.9756	0.8665	1.2750	+ 7.423	+ 8.580
	14	9.1339	0.9750	0.8842	1.2716	+ 7.557	+ 7.477
	15	9.1436	0.9744	0.9011	1.2681	+ 7.554	- 8.519
	16	+ 9.1530	+ 0.9738	- 0.9172	+ 1.2644	+ 7.442	- 8.785
	17	9.1621	0.9731	0.9326	1.2605	+ 7.125	- 8.869
	18	9.1710	0.9724	0.9474	1.2565	- 6.413	- 8.833
	19	9.1796	0.9717	0.9615	1.2523	- 7.180	- 8.653
	20	9.1879	0.9710	0.9750	1.2479	- 7.332	- 8.114
	21	+ 9.1960	+ 0.9703	- 0.9880	+ 1.2433	- 7.299	+ 8.322
	22	9.2039	0.9696	1.0005	1.2385	- 7.062	+ 8.699
	23	9.2116	0.9688	1.0125	1.2336	+ 6.077	+ 8.820
	24	9.2190	0.9680	1.0241	1.2284	+ 7.180	+ 8.833
	25	9.2263	0.9672	1.0352	1.2231	+ 7.433	+ 8.756
	26	+ 9.2333	+ 0.9664	- 1.0459	+ 1.2175	+ 7.532	+ 8.568
	27	9.2402	0.9656	1.0562	1.2117	+ 7.562	+ 8.041
	28	9.2468	0.9648	1.0661	1.2058	+ 7.514	- 8.176
	29	9.2533	0.9640	1.0757	1.1996	+ 7.382	- 8.580
	30	9.2597	0.9631	1.0849	1.1931	+ 7.077	- 8.732
Feb.	31	+ 9.2658	+ 0.9623	- 1.0938	+ 1.1865	- 6.475	- 8.799
	1	9.2718	0.9614	1.1024	1.1796	- 7.286	- 8.785
	2	9.2776	0.9605	1.1107	1.1724	- 7.535	- 8.690
	3	9.2833	0.9597	1.1186	1.1650	- 7.653	- 8.447
	4	9.2889	0.9588	1.1263	1.1574	- 7.699	+ 7.000
	5	+ 9.2943	+ 0.9579	- 1.1338	+ 1.1494	- 7.676	+ 8.505
	6	9.2996	0.9570	1.1410	1.1412	- 7.569	+ 8.763
	7	9.3047	0.9562	1.1479	1.1327	- 7.308	+ 8.851
	8	9.3097	0.9553	1.1546	1.1239	- 5.998	+ 8.833
	9	9.3145	0.9545	1.1610	1.1148	+ 7.239	+ 8.681
	10	+ 9.3193	+ 0.9536	- 1.1672	+ 1.1053	+ 7.469	+ 8.204
	11	9.3239	0.9528	1.1732	1.0955	+ 7.554	- 8.322
	12	9.3284	0.9519	1.1790	1.0853	+ 7.457	- 8.724
	13	9.3329	0.9511	1.1845	1.0748	+ 7.223	- 8.857
	14	9.3372	0.9502	1.1899	1.0638	+ 6.299	- 8.857
	15	+ 9.3414	+ 0.9494	- 1.1950	+ 1.0524	- 7.055	- 8.740
16	+ 9.3455	+ 0.9486	- 1.2000	+ 1.0406	- 7.295	- 8.398	

## 216 APPARENT PLACES OF STARS, 1922.

## BESSEL'S DAY NUMBERS.

Mean Midnight.	Log. A.	Log. B.	Log. C.	Log. D.	Log. A'.	Log. B'.
Feb. 16	+ 9.3455	+ 0.9486	- 1.2000	+ 1.0406	- 7.295	- 8.398
17	9.3495	0.9478	1.2048	1.0284	- 7.303	+ 8.000
18	9.3534	0.9470	1.2093	1.0156	- 7.112	+ 8.623
19	9.3573	0.9462	1.2137	1.0023	- 5.998	+ 8.792
20	9.3610	0.9455	1.2180	0.9885	+ 7.125	+ 8.833
21	+ 9.3646	+ 0.9448	- 1.2220	+ 0.9741	+ 7.416	+ 8.785
22	9.3682	0.9440	1.2259	0.9590	+ 7.545	+ 8.633
23	9.3717	0.9434	1.2296	0.9433	+ 7.587	+ 8.279
24	9.3751	0.9427	1.2331	0.9269	+ 7.564	- 7.845
25	9.3785	0.9421	1.2365	0.9097	+ 7.475	- 8.491
26	+ 9.3818	+ 0.9414	- 1.2397	+ 0.8916	+ 7.263	- 8.699
27	9.3850	0.9408	1.2428	0.8726	+ 6.600	- 8.785
28	9.3882	0.9403	1.2457	0.8526	- 7.077	- 8.799
Mar. 1	9.3913	0.9397	1.2484	0.8316	- 7.436	- 8.732
2	9.3943	0.9392	1.2510	0.8093	- 7.602	- 8.544
3	+ 9.3973	+ 0.9387	- 1.2535	+ 0.7857	- 7.677	- 7.845
4	9.4003	0.9382	1.2558	0.7606	- 7.683	+ 8.342
5	9.4031	0.9377	1.2579	0.7339	- 7.613	+ 8.699
6	9.4060	0.9373	1.2599	0.7053	- 7.436	+ 8.833
7	9.4088	0.9370	1.2618	0.6745	- 6.971	+ 8.851
8	+ 9.4115	+ 0.9366	- 1.2635	+ 0.6413	+ 6.952	+ 8.756
9	9.4143	0.9363	1.2651	0.6052	+ 7.352	+ 8.462
10	9.4170	0.9360	1.2666	0.5657	+ 7.463	- 7.845
11	9.4196	0.9358	1.2679	0.5221	+ 7.433	- 8.623
12	9.4222	0.9356	1.2691	0.4735	+ 7.234	- 8.826
13	+ 9.4248	+ 0.9354	- 1.2701	+ 0.4187	+ 6.578	- 8.869
14	9.4273	0.9352	1.2710	0.3558	- 6.980	- 8.799
15	9.4298	0.9350	1.2718	0.2822	- 7.295	- 8.556
16	9.4323	0.9349	1.2724	0.1933	- 7.344	- 7.000
17	9.4348	0.9348	1.2729	0.0814	- 7.218	+ 8.505
18	+ 9.4373	+ 0.9348	- 1.2733	+ 9.9300	- 6.697	+ 8.756
19	9.4397	0.9348	1.2736	9.6957	+ 6.980	+ 8.833
20	9.4421	0.9349	1.2737	+ 9.1508	+ 7.378	+ 8.813
21	9.4445	0.9350	1.2737	- 9.3290	+ 7.542	+ 8.699
22	9.4469	0.9351	1.2735	9.7542	+ 7.609	+ 8.431
23	+ 9.4493	+ 0.9352	- 1.2732	- 9.9647	+ 7.600	+ 7.000
24	9.4517	0.9353	1.2728	0.1057	+ 7.535	- 8.380
25	9.4541	0.9355	1.2723	0.2118	+ 7.378	- 8.653
26	9.4565	0.9358	1.2716	0.2969	+ 7.015	- 8.771
27	9.4588	0.9361	1.2708	0.3678	- 6.697	- 8.799
28	+ 9.4612	+ 0.9364	- 1.2699	- 0.4286	- 7.303	- 8.756
29	9.4635	0.9367	1.2689	0.4818	- 7.529	- 8.623
30	9.4659	0.9371	1.2677	0.5291	- 7.634	- 8.230
31	9.4682	0.9375	1.2664	0.5715	- 7.663	+ 8.114
Apr. 1	9.4706	0.9379	1.2649	0.6101	- 7.619	+ 8.613
2	+ 9.4730	+ 0.9384	- 1.2633	- 0.6453	- 7.481	+ 8.799
3	+ 9.4754	+ 0.9389	- 1.2616	- 0.6778	- 7.150	+ 8.851

# APPARENT PLACES OF STARS, 1922. 217

## BESSEL'S DAY NUMBERS.

Mean Midnight.	Log. A.	Log. B.	Log. C.	Log. D.	Log. A'.	Log. B'.		
Apr.	3	+ 9.4754	+ 0.9389	- 1.2616	- 0.6778	- 7.150	+ 8.851	
	4	9.4777	0.9394	1.2598	0.7079	+ 6.554	+ 8.799	
	5	9.4801	0.9399	1.2578	0.7359	+ 7.263	+ 8.591	
	6	9.4825	0.9405	1.2556	0.7620	+ 7.423	+ 7.699	
	7	9.4849	0.9411	1.2534	0.7865	+ 7.416	- 8.491	
	8	+ 9.4873	+ 0.9417	- 1.2510	- 0.8096	+ 7.253	- 8.778	
	9	9.4898	0.9423	1.2484	0.8314	+ 6.679	- 8.869	
	10	9.4922	0.9430	1.2457	0.8520	- 6.989	- 8.839	
	11	9.4947	0.9437	1.2429	0.8716	- 7.324	- 8.672	
	12	9.4971	0.9444	1.2399	0.8901	- 7.410	- 8.146	
	13	+ 9.4996	+ 0.9451	- 1.2368	- 0.9078	- 7.344	+ 8.301	
	14	9.5021	0.9459	1.2336	0.9247	- 7.070	+ 8.690	
	15	9.5046	0.9467	1.2302	0.9408	+ 6.529	+ 8.820	
	16	9.5071	0.9475	1.2266	0.9562	+ 7.277	+ 8.833	
	17	9.5097	0.9483	1.2229	0.9709	+ 7.500	+ 8.756	
	18	+ 9.5122	+ 0.9491	- 1.2190	- 0.9850	+ 7.600	+ 8.544	
	19	9.5148	0.9500	1.2149	0.9986	+ 7.621	+ 7.954	
	20	9.5174	0.9508	1.2107	1.0116	+ 7.576	- 8.230	
	21	9.5200	0.9517	1.2063	1.0241	+ 7.457	- 8.591	
	22	9.5227	0.9526	1.2018	1.0361	+ 7.202	- 8.740	
	23	+ 9.5253	+ 0.9535	- 1.1971	- 1.0477	+ 5.998	- 8.799	
	24	9.5280	0.9543	1.1922	1.0588	- 7.156	- 8.778	
	25	9.5307	0.9552	1.1871	1.0696	- 7.451	- 8.672	
	26	9.5334	0.9562	1.1819	1.0799	- 7.587	- 8.415	
	27	9.5361	0.9571	1.1764	1.0899	- 7.639	+ 7.301	
	28	+ 9.5388	+ 0.9580	- 1.1708	- 1.0995	- 7.617	+ 8.505	
	29	9.5416	0.9590	1.1649	1.1088	- 7.506	+ 8.756	
	30	9.5444	0.9599	1.1589	1.1178	- 7.244	+ 8.845	
	May	1	9.5472	0.9608	1.1527	1.1265	- 5.299	+ 8.833
		2	9.5500	0.9617	1.1462	1.1348	+ 7.202	+ 8.699
3		+ 9.5528	+ 0.9627	- 1.1395	- 1.1429	+ 7.420	+ 8.279	
4		9.5556	0.9637	1.1326	1.1507	+ 7.454	- 8.255	
5		9.5585	0.9646	1.1255	1.1583	+ 7.344	- 8.708	
6		9.5614	0.9655	1.1181	1.1656	+ 6.962	- 8.851	
7		9.5642	0.9664	1.1105	1.1726	- 6.818	- 8.857	
8		+ 9.5671	+ 0.9674	- 1.1026	- 1.1794	- 7.308	- 8.749	
9		9.5701	0.9683	1.0944	1.1860	- 7.445	- 8.415	
10		9.5730	0.9692	1.0860	1.1923	- 7.439	+ 7.954	
11		9.5759	0.9701	1.0773	1.1985	- 7.286	+ 8.613	
12		9.5789	0.9710	1.0683	1.2044	- 6.697	+ 8.799	
13		+ 9.5818	+ 0.9719	- 1.0589	- 1.2101	+ 7.055	+ 8.845	
14		9.5848	0.9727	1.0492	1.2156	+ 7.416	+ 8.799	
15		9.5878	0.9736	1.0392	1.2210	+ 7.564	+ 8.643	
16		9.5908	0.9745	1.0289	1.2261	+ 7.615	+ 8.255	
17		9.5938	0.9753	1.0181	1.2311	+ 7.591	- 7.954	
18		+ 9.5968	+ 0.9761	- 1.0070	- 1.2359	+ 7.503	- 8.519	
19		+ 9.5998	+ 0.9769	- 0.9954	- 1.2405	+ 7.308	- 8.708	

## 218 APPARENT PLACES OF STARS, 1922.

## BESSEL'S DAY NUMBERS.

Mean Midnight.		Log. A.	Log. B.	Log. C.	Log. D.	Log. A'.	Log. B'.
May	19	+ 9.5998	+ 0.9769	- 0.9954	- 1.2405	+ 7.308	- 8.708
	20	9.6028	0.9777	0.9834	1.2449	+ 6.761	- 8.785
	21	9.6058	0.9785	0.9710	1.2492	- 6.980	- 8.792
	22	9.6089	0.9793	0.9581	1.2533	- 7.382	- 8.724
	23	9.6119	0.9801	0.9446	1.2572	- 7.552	- 8.531
	24	+ 9.6149	+ 0.9808	- 0.9306	- 1.2610	- 7.627	- 7.903
	25	9.6180	0.9815	0.9160	1.2647	- 7.627	+ 8.342
	26	9.6210	0.9822	0.9008	1.2682	- 7.542	+ 8.690
	27	9.6240	0.9828	0.8849	1.2715	- 7.324	+ 8.826
	28	9.6271	0.9835	0.8682	1.2747	- 6.554	+ 8.845
	29	+ 9.6301	+ 0.9841	- 0.8508	- 1.2777	+ 7.138	+ 8.756
	30	9.6331	0.9847	0.8326	1.2806	+ 7.420	+ 8.477
	31	9.6362	0.9853	0.8134	1.2833	+ 7.498	- 7.699
June	1	9.6392	0.9858	0.7932	1.2859	+ 7.445	- 8.602
	2	9.6422	0.9864	0.7719	1.2884	+ 7.213	- 8.813
	3	+ 9.6452	+ 0.9869	- 0.7494	- 1.2908	+ 5.600	- 8.863
	4	9.6482	0.9874	0.7256	1.2930	- 7.180	- 8.799
	5	9.6512	0.9878	0.7002	1.2951	- 7.413	- 8.580
	6	9.6542	0.9883	0.6732	1.2970	- 7.466	- 7.477
	7	9.6572	0.9887	0.6442	1.2988	- 7.378	+ 8.491
	8	+ 9.6602	+ 0.9892	- 0.6131	- 1.3005	- 7.077	+ 8.756
	9	9.6632	0.9895	0.5794	1.3021	+ 6.578	+ 8.845
	10	9.6661	0.9899	0.5427	1.3035	+ 7.290	+ 8.820
	11	9.6691	0.9902	0.5026	1.3048	+ 7.509	+ 8.699
	12	9.6720	0.9905	0.4582	1.3060	+ 7.589	+ 8.415
	13	+ 9.6750	+ 0.9907	- 0.4086	- 1.3070	+ 7.596	+ 6.000
	14	9.6779	0.9910	0.3525	1.3080	+ 7.529	- 8.415
	15	9.6808	0.9912	0.2880	1.3088	+ 7.371	- 8.663
	16	9.6837	0.9914	0.2120	1.3095	+ 6.998	- 8.771
	17	9.6865	0.9915	0.1196	1.3101	- 6.730	- 8.792
	18	+ 9.6894	+ 0.9916	- 0.0021	- 1.3105	- 7.316	- 8.740
	19	9.6922	0.9918	9.8402	1.3108	- 7.529	- 8.602
	20	9.6950	0.9919	9.5792	1.3110	- 7.625	- 8.230
	21	9.6978	0.9919	- 8.8235	1.3111	- 7.643	+ 8.079
	22	9.7006	0.9919	+ 9.3909	1.3111	- 7.591	+ 8.613
	23	+ 9.7034	+ 0.9919	+ 9.7472	- 1.3109	- 7.436	+ 8.799
	24	9.7061	0.9919	9.9401	1.3107	- 7.031	+ 8.851
	25	9.7089	0.9918	0.0731	1.3103	+ 6.890	+ 8.806
	26	9.7116	0.9917	0.1747	1.3097	+ 7.371	+ 8.613
	27	9.7143	0.9916	0.2568	1.3091	+ 7.509	+ 7.845
	28	+ 9.7169	+ 0.9915	+ 0.3258	- 1.3083	+ 7.506	- 8.447
	29	9.7196	0.9913	0.3852	1.3075	+ 7.378	- 8.763
	30	9.7222	0.9911	0.4373	1.3065	+ 6.980	- 8.863
July	1	9.7248	0.9909	0.4837	1.3053	- 6.831	- 8.839
	2	9.7274	0.9907	0.5255	1.3041	- 7.308	- 8.681
	3	+ 9.7299	+ 0.9904	+ 0.5635	- 1.3027	- 7.433	- 8.204
	4	+ 9.7324	+ 0.9901	+ 0.5984	- 1.3012	- 7.406	+ 8.279



# APPARENT PLACES OF STARS, 1922. 219

## BESSEL'S DAY NUMBERS.

Mean Midnight.	Log. A.	Log. B.	Log. C.	Log. D.	Log. A'.	Log. B'.
July	4 + 9.7324	+ 0.9901	+ 0.5984	- 1.3012	- 7.406	+ 8.279
	5 9.7349	0.9898	0.6305	1.2996	- 7.202	+ 8.699
	6 9.7374	0.9894	0.6603	1.2978	- 6.202	+ 8.826
	7 9.7399	0.9891	0.6881	1.2960	+ 7.150	+ 8.839
	8 9.7423	0.9887	0.7141	1.2940	+ 7.448	+ 8.748
	9 + 9.7447	+ 0.9883	+ 0.7386	- 1.2918	+ 7.569	+ 8.531
	10 9.7471	0.9878	0.7616	1.2895	+ 7.594	+ 7.845
	11 9.7494	0.9873	0.7833	1.2871	+ 7.549	- 8.279
	12 9.7518	0.9868	0.8039	1.2846	+ 7.429	- 8.602
	13 9.7541	0.9863	0.8235	1.2819	+ 7.132	- 8.748
	14 + 9.7564	+ 0.9858	+ 0.8421	- 1.2791	- 6.202	- 8.799
	15 9.7586	0.9853	0.8598	1.2762	- 7.223	- 8.771
	16 9.7608	0.9847	0.8767	1.2731	- 7.492	- 8.663
	17 9.7630	0.9841	0.8929	1.2698	- 7.619	- 8.398
	18 9.7652	0.9835	0.9084	1.2664	- 7.663	+ 7.477
	19 + 9.7674	+ 0.9829	+ 0.9232	- 1.2629	- 7.639	+ 8.505
	20 9.7695	0.9822	0.9374	1.2592	- 7.537	+ 8.748
	21 9.7716	0.9816	0.9510	1.2554	- 7.277	+ 8.839
	22 9.7737	0.9809	0.9642	1.2514	- 5.600	+ 8.833
	23 9.7757	0.9802	0.9768	1.2472	+ 7.218	+ 8.708
	24 + 9.7777	+ 0.9795	+ 0.9890	- 1.2429	+ 7.460	+ 8.322
	25 9.7797	0.9788	1.0007	1.2385	+ 7.519	- 8.176
	26 9.7817	0.9780	1.0119	1.2338	+ 7.445	- 8.681
	27 9.7836	0.9773	1.0228	1.2290	+ 7.208	- 8.839
	28 9.7855	0.9766	1.0333	1.2240	+ 5.776	- 8.857
Aug.	29 + 9.7874	+ 0.9758	+ 1.0434	- 1.2188	- 7.138	- 8.763
	30 9.7892	0.9750	1.0532	1.2134	- 7.364	- 8.447
	31 9.7911	0.9742	1.0627	1.2079	- 7.382	+ 7.845
	1 9.7929	0.9734	1.0718	1.2021	- 7.228	+ 8.602
	2 9.7946	0.9726	1.0807	1.1962	- 6.641	+ 8.792
	3 + 9.7964	+ 0.9717	+ 1.0892	- 1.1900	+ 7.055	+ 8.851
	4 9.7981	0.9709	1.0974	1.1836	+ 7.410	+ 8.799
	5 9.7998	0.9701	1.1054	1.1770	+ 7.559	+ 8.633
	6 9.8015	0.9692	1.1131	1.1702	+ 7.609	+ 8.204
	7 9.8031	0.9684	1.1206	1.1631	+ 7.582	- 8.041
	8 + 9.8047	+ 0.9675	+ 1.1279	- 1.1558	+ 7.484	- 8.544
	9 9.8063	0.9667	1.1349	1.1483	+ 7.268	- 8.716
	10 9.8079	0.9658	1.1416	1.1405	+ 6.600	- 8.792
	11 9.8095	0.9650	1.1482	1.1324	- 7.070	- 8.785
	12 9.8110	0.9641	1.1545	1.1240	- 7.426	- 8.708
	13 + 9.8125	+ 0.9633	+ 1.1606	- 1.1153	- 7.589	- 8.505
	14 9.8139	0.9624	1.1665	1.1064	- 7.661	- 7.845
	15 9.8154	0.9616	1.1723	1.0971	- 7.666	+ 8.342
	16 9.8168	0.9608	1.1778	1.0875	- 7.607	+ 8.690
	17 9.8182	0.9599	1.1831	1.0775	- 7.439	+ 8.820
	18 + 9.8196	+ 0.9591	+ 1.1883	- 1.0672	- 6.998	+ 8.845
	19 + 9.8210	+ 0.9583	+ 1.1933	- 1.0565	+ 6.879	+ 8.763

## 220 APPARENT PLACES OF STARS, 1922.

## BESSEL'S DAY NUMBERS.

Mean Midnight.	Log. A.	Log. B.	Log. C.	Log. D.	Log. A'.	Log. B'.
Aug. 19	+ 9·8210	+ 0·9583	+ 1·1933	— 1·0565	+ 6·879	+ 8·763
20	9·8223	0·9575	1·1981	1·0454	+ 7·336	+ 8·491
21	9·8236	0·9567	1·2027	1·0339	+ 7·457	— 7·602
22	9·8249	0·9559	1·2071	1·0219	+ 7·439	— 8·580
23	9·8262	0·9551	1·2114	1·0095	+ 7·263	— 8·806
24	+ 9·8275	+ 0·9544	+ 1·2155	— 0·9965	+ 6·641	— 8·869
25	9·8287	0·9536	1·2195	0·9830	— 6·998	— 8·813
26	9·8300	0·9529	1·2233	0·9690	— 7·299	— 8·602
27	9·8312	0·9522	1·2270	0·9544	— 7·364	— 7·778
28	9·8324	0·9515	1·2305	0·9391	— 7·258	+ 8·462
29	+ 9·8335	+ 0·9508	+ 1·2339	— 0·9231	— 6·818	+ 8·748
30	9·8347	0·9501	1·2371	0·9064	+ 6·933	+ 8·839
31	9·8358	0·9495	1·2402	0·8889	+ 7·378	+ 8·820
Sept. 1	9·8369	0·9489	1·2431	0·8705	+ 7·557	+ 8·708
2	9·8380	0·9482	1·2459	0·8511	+ 7·627	+ 8·415
3	+ 9·8391	+ 0·9476	+ 1·2485	— 0·8307	+ 7·623	— 7·301
4	9·8402	0·9471	1·2510	0·8092	+ 7·552	— 8·447
5	9·8413	0·9466	1·2534	0·7864	+ 7·392	— 8·681
6	9·8423	0·9461	1·2556	0·7622	+ 7·015	— 8·778
7	9·8434	0·9456	1·2577	0·7364	— 6·790	— 8·792
8	+ 9·8444	+ 0·9451	+ 1·2597	— 0·7088	— 7·312	— 8·732
9	9·8454	0·9447	1·2615	0·6792	— 7·524	— 8·580
10	9·8464	0·9443	1·2632	0·6473	— 7·631	— 8·176
11	9·8474	0·9439	1·2648	0·6127	— 7·661	+ 8·114
12	9·8484	0·9435	1·2662	0·5749	— 7·627	+ 8·613
13	+ 9·8494	+ 0·9432	+ 1·2675	— 0·5334	— 7·509	+ 8·799
14	9·8503	0·9429	1·2687	0·4873	— 7·239	+ 8·851
15	9·8513	0·9426	1·2698	0·4356	— 5·299	+ 8·806
16	9·8523	0·9424	1·2707	0·3767	+ 7·156	+ 8·623
17	9·8532	0·9422	1·2715	0·3084	+ 7·371	+ 8·000
18	+ 9·8541	+ 0·9420	+ 1·2722	— 0·2270	+ 7·396	— 8·415
19	9·8551	0·9419	1·2728	0·1265	+ 7·263	— 8·748
20	9·8560	0·9418	1·2732	9·9954	+ 6·761	— 8·857
21	9·8569	0·9417	1·2735	9·8063	— 6·922	— 8·845
22	9·8579	0·9417	1·2737	— 9·4633	— 7·299	— 8·699
23	+ 9·8588	+ 0·9417	+ 1·2737	+ 8·7730	— 7·396	— 8·255
24	9·8597	0·9417	1·2736	9·6120	— 7·340	+ 8·255
25	9·8607	0·9417	1·2734	9·8805	— 7·055	+ 8·681
26	9·8616	0·9418	1·2731	0·0451	+ 6·621	+ 8·820
27	9·8625	0·9419	1·2726	0·1641	+ 7·320	+ 8·839
28	+ 9·8634	+ 0·9421	+ 1·2720	+ 0·2574	+ 7·542	+ 8·756
29	9·8643	0·9422	1·2713	0·3341	+ 7·639	+ 8·544
30	9·8653	0·9424	1·2704	0·3992	+ 7·657	+ 7·845
Oct. 1	9·8662	0·9427	1·2694	0·4557	+ 7·609	— 8·301
2	9·8671	0·9430	1·2683	0·5056	+ 7·487	— 8·633
3	+ 9·8681	+ 0·9433	+ 1·2671	+ 0·5502	+ 7·234	— 8·756
4	+ 9·8690	+ 0·9437	+ 1·2657	+ 0·5906	+ 6·299	— 8·792

# APPARENT PLACES OF STARS, 1922. 221

## BESSEL'S DAY NUMBERS.

Mean Midnight.	Log. A.	Log. B.	Log. C.	Log. D.	Log. A'.	Log. B'.
Oct. 4	+ 9.8690	+ 0.9437	+ 1.2657	+ 0.5906	+ 6.299	— 8.792
5	9.8699	0.9440	1.2642	0.6275	— 7.132	— 8.763
6	9.8709	0.9444	1.2625	0.6614	— 7.439	— 8.643
7	9.8718	0.9448	1.2607	0.6927	— 7.580	— 8.362
8	9.8728	0.9452	1.2588	0.7218	— 7.636	+ 7.477
9	+ 9.8737	+ 0.9457	+ 1.2567	+ 0.7490	— 7.621	+ 8.491
10	9.8747	0.9462	1.2545	0.7745	— 7.532	+ 8.740
11	9.8757	0.9468	1.2522	0.7984	— 7.324	+ 8.839
12	9.8767	0.9473	1.2497	0.8210	— 6.714	+ 8.833
13	9.8777	0.9479	1.2470	0.8424	+ 6.989	+ 8.716
14	+ 9.8787	+ 0.9485	+ 1.2442	+ 0.8626	+ 7.303	+ 8.342
15	9.8797	0.9492	1.2413	0.8819	+ 7.371	— 8.146
16	9.8807	0.9498	1.2382	0.9002	+ 7.268	— 8.663
17	9.8818	0.9505	1.2350	0.9176	+ 6.855	— 8.839
18	9.8828	0.9512	1.2316	0.9343	— 6.867	— 8.863
19	+ 9.8839	+ 0.9519	+ 1.2280	+ 0.9502	— 7.312	— 8.763
20	9.8850	0.9527	1.2243	0.9654	— 7.448	— 8.477
21	9.8860	0.9535	1.2204	0.9800	— 7.442	+ 7.776
22	9.8871	0.9542	1.2163	0.9940	— 7.272	+ 8.591
23	9.8882	0.9550	1.2121	1.0075	— 6.554	+ 8.799
24	+ 9.8894	+ 0.9558	+ 1.2077	+ 1.0204	+ 7.150	+ 8.857
25	9.8905	0.9566	1.2031	1.0329	+ 7.481	+ 8.806
26	9.8916	0.9574	1.1983	1.0448	+ 7.619	+ 8.633
27	9.8928	0.9583	1.1933	1.0563	+ 7.666	+ 8.230
28	9.8940	0.9591	1.1881	1.0675	+ 7.645	— 8.041
29	+ 9.8951	+ 0.9600	+ 1.1828	+ 1.0782	+ 7.554	— 8.568
30	9.8963	0.9609	1.1772	1.0885	+ 7.364	— 8.732
31	9.8975	0.9617	1.1715	1.0984	+ 6.912	— 8.799
Nov. 1	9.8988	0.9626	1.1655	1.1080	— 6.879	— 8.785
2	9.9000	0.9636	1.1593	1.1173	— 7.336	— 8.690
3	+ 9.9012	+ 0.9645	+ 1.1528	+ 1.1263	— 7.517	— 8.477
4	9.9025	0.9654	1.1461	1.1349	— 7.598	— 7.778
5	9.9038	0.9663	1.1392	1.1433	— 7.606	+ 8.342
6	9.9051	0.9672	1.1321	1.1513	— 7.540	+ 8.681
7	9.9064	0.9681	1.1246	1.1591	— 7.364	+ 8.820
8	+ 9.9077	+ 0.9690	+ 1.1169	+ 1.1667	— 6.901	+ 8.845
9	9.9090	0.9699	1.1090	1.1739	+ 6.879	+ 8.763
10	9.9104	0.9708	1.1007	1.1810	+ 7.290	+ 8.519
11	9.9118	0.9717	1.0922	1.1878	+ 7.392	— 7.000
12	9.9131	0.9726	1.0833	1.1943	+ 7.340	— 8.556
13	+ 9.9145	+ 0.9734	+ 1.0741	+ 1.2006	+ 7.055	— 8.799
14	9.9159	0.9743	1.0645	1.2067	— 6.578	— 8.863
15	9.9173	0.9751	1.0546	1.2126	— 7.272	— 8.813
16	9.9187	0.9760	1.0443	1.2183	— 7.466	— 8.623
17	9.9202	0.9769	1.0336	1.2238	— 7.500	— 7.903
18	+ 9.9216	+ 0.9777	+ 1.0226	+ 1.2291	— 7.423	+ 8.447
19	+ 9.9231	+ 0.9785	+ 1.0111	+ 1.2342	— 7.119	+ 8.748

## 222 APPARENT PLACES OF STARS, 1922.

## BESSEL'S DAY NUMBERS.

Mean Midnight.	Log. A.	Log. B.	Log. C.	Log. D.	Log. A'.	Log. B'.
Nov. 19	+ 9.9231	+ 0.9785	+ 1.0111	+ 1.2342	- 7.119	+ 8.748
20	9.9245	0.9793	0.9991	1.2391	+ 6.697	+ 8.845
21	9.9260	0.9801	0.9866	1.2438	+ 7.356	+ 8.826
22	9.9275	0.9808	0.9737	1.2483	+ 7.566	+ 8.708
23	9.9290	0.9816	0.9602	1.2527	+ 7.649	+ 8.415
24	+ 9.9305	+ 0.9823	+ 0.9461	+ 1.2568	+ 7.655	- 7.477
25	9.9320	0.9830	0.9314	1.2608	+ 7.591	- 8.477
26	9.9335	0.9837	0.9160	1.2647	+ 7.445	- 8.699
27	9.9350	0.9844	0.8999	1.2683	+ 7.132	- 8.785
28	9.9366	0.9850	0.8831	1.2718	- 6.340	- 8.792
29	+ 9.9381	+ 0.9857	+ 0.8654	+ 1.2752	- 7.228	- 8.732
30	9.9397	0.9863	0.8469	1.2784	- 7.466	- 8.568
Dec. 1	9.9412	0.9868	0.8273	1.2814	- 7.575	- 8.146
2	9.9428	0.9874	0.8067	1.2842	- 7.600	+ 8.114
3	9.9444	0.9880	0.7850	1.2869	- 7.554	+ 8.602
4	+ 9.9459	+ 0.9884	+ 0.7619	+ 1.2895	- 7.413	+ 8.785
5	9.9475	0.9889	0.7374	1.2919	- 7.047	+ 8.851
6	9.9491	0.9894	0.7112	1.2942	+ 6.730	+ 8.806
7	9.9507	0.9898	0.6832	1.2963	+ 7.281	+ 8.643
8	9.9522	0.9902	0.6531	1.2983	+ 7.429	+ 8.079
9	+ 9.9538	+ 0.9906	+ 0.6207	+ 1.3001	+ 7.423	- 8.380
10	9.9554	0.9910	0.5854	1.3018	+ 7.253	- 8.732
11	9.9570	0.9913	0.5469	1.3033	+ 6.578	- 8.857
12	9.9586	0.9915	0.5045	1.3047	- 7.098	- 8.851
13	9.9602	0.9918	0.4572	1.3060	- 7.416	- 8.716
14	+ 9.9617	+ 0.9920	+ 0.4041	+ 1.3071	- 7.514	- 8.301
15	9.9633	0.9922	0.3434	1.3081	- 7.484	+ 8.204
16	9.9649	0.9923	0.2726	1.3089	- 7.303	+ 8.681
17	9.9665	0.9925	0.1877	1.3096	- 6.578	+ 8.826
18	9.9681	0.9926	0.0820	1.3102	+ 7.150	+ 8.845
19	+ 9.9697	+ 0.9926	+ 9.9418	+ 1.3106	+ 7.478	+ 8.756
20	9.9712	0.9926	9.7331	1.3109	+ 7.607	+ 8.531
21	9.9728	0.9926	+ 9.3166	1.3111	+ 7.641	+ 7.778
22	9.9743	0.9926	- 9.1028	1.3111	+ 7.607	- 8.342
23	9.9759	0.9926	9.6632	1.3110	+ 7.487	- 8.643
24	+ 9.9774	+ 0.9925	- 9.9000	+ 1.3107	+ 7.244	- 8.763
25	9.9790	0.9923	0.0522	1.3103	+ 6.378	- 8.799
26	9.9805	0.9922	0.1646	1.3098	- 7.112	- 8.756
27	9.9820	0.9920	0.2537	1.3091	- 7.420	- 8.633
28	9.9836	0.9917	0.3275	1.3083	- 7.554	- 8.342
29	+ 9.9851	+ 0.9915	- 0.3904	+ 1.3074	- 7.607	+ 7.602
30	9.9866	0.9912	0.4453	1.3063	- 7.585	+ 8.491
31	9.9880	0.9908	0.4939	1.3051	- 7.478	+ 8.732
32	+ 9.9895	+ 0.9905	- 0.5374	+ 1.3037	- 7.218	+ 8.833

# APPARENT PLACES OF STARS, 1922. 223

## QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log. <i>g</i>	<i>G</i>	Log. <i>h</i>	<i>H</i>	Log. <i>i</i>	<i>f'</i>	Log. <i>g'</i>	<i>G'</i>
Jan.	<sup>s</sup> 1 +0.290	0.9889	78° 49'	1.3099	350° 3'	-0.1847	<sup>s</sup> +0.009	8.802	340°
	2 0.300	0.9893	78 25	1.3097	349 7	0.2233	+0.006	8.772	312
	3 0.310	0.9896	78 2	1.3094	348 10	0.2586	+0.002	8.773	282
	4 0.320	0.9899	77 39	1.3091	347 14	0.2912	-0.003	8.823	254
	5 0.330	0.9902	77 16	1.3088	346 17	0.3213	-0.008	8.886	230
	6 +0.340	0.9905	76 53	1.3085	345 20	-0.3493	-0.012	8.943	209
	7 0.350	0.9908	76 30	1.3082	344 23	0.3755	-0.014	8.974	191
	8 0.360	0.9911	76 7	1.3078	343 26	0.4001	-0.015	8.995	173
	9 0.370	0.9913	75 44	1.3074	342 29	0.4232	-0.013	8.983	154
	10 0.380	0.9916	75 21	1.3070	341 32	0.4450	-0.009	8.932	133
	11 +0.390	0.9918	74 59	1.3066	340 35	-0.4656	-0.003	8.872	105
	12 0.400	0.9920	74 37	1.3062	339 38	0.4852	+0.003	8.820	72
	13 0.409	0.9922	74 15	1.3058	338 40	0.5038	+0.008	8.815	36
	14 0.419	0.9924	73 53	1.3053	337 43	0.5215	+0.011	8.859	2
	15 0.428	0.9926	73 31	1.3048	336 46	0.5384	+0.011	8.898	335
	16 +0.437	0.9928	73 9	1.3043	335 48	-0.5545	+0.009	8.916	312
	17 0.446	0.9930	72 47	1.3038	334 50	0.5699	+0.004	8.896	290
	18 0.455	0.9932	72 25	1.3033	333 52	0.5847	-0.001	8.834	266
	19 0.464	0.9934	72 4	1.3028	332 54	0.5988	-0.005	8.734	236
	20 0.473	0.9936	71 43	1.3023	331 56	0.6123	-0.007	8.653	197
	21 +0.482	0.9937	71 22	1.3017	330 57	-0.6253	-0.006	8.654	152
	22 0.491	0.9938	71 1	1.3012	329 58	0.6378	-0.004	8.741	115
	23 0.500	0.9940	70 40	1.3006	328 59	0.6498	0.000	8.820	88
	24 0.509	0.9941	70 20	1.3000	328 0	0.6614	+0.005	8.872	66
	25 0.517	0.9942	70 0	1.2994	327 1	0.6725	+0.008	8.896	46
	26 +0.526	0.9944	69 40	1.2988	326 2	-0.6832	+0.011	8.890	28
	27 0.534	0.9945	69 20	1.2982	325 3	0.6935	+0.011	8.869	9
	28 0.543	0.9947	69 0	1.2976	324 4	0.7034	+0.010	8.827	347
	29 0.551	0.9948	68 41	1.2969	323 4	0.7130	+0.007	8.789	322
	30 0.559	0.9949	68 22	1.2963	322 4	0.7222	+0.004	8.771	294
Feb.	31 +0.567	0.9950	68 3	1.2956	321 4	-0.7311	-0.001	8.801	265
	1 0.575	0.9951	67 44	1.2949	320 3	0.7397	-0.006	8.859	238
	2 0.582	0.9952	67 25	1.2942	319 3	0.7480	-0.011	8.926	216
	3 0.590	0.9953	67 6	1.2936	318 3	0.7559	-0.014	8.975	197
	4 0.598	0.9954	66 48	1.2929	317 2	0.7636	-0.015	9.001	179
	5 +0.605	0.9955	66 30	1.2923	316 2	-0.7711	-0.015	9.001	161
	6 0.613	0.9956	66 12	1.2916	315 1	0.7783	-0.011	8.974	142
	7 0.620	0.9957	65 54	1.2910	313 59	0.7852	-0.006	8.913	120
	8 0.627	0.9958	65 37	1.2903	312 58	0.7919	0.000	8.833	92
	9 0.634	0.9960	65 20	1.2897	311 57	0.7983	+0.005	8.773	54
	10 +0.641	0.9961	65 3	1.2890	310 56	-0.8045	+0.009	8.787	15
	11 0.648	0.9962	64 46	1.2884	309 54	0.8105	+0.010	8.846	343
	12 0.655	0.9964	64 29	1.2877	308 52	0.8163	+0.009	8.893	317
	13 0.662	0.9965	64 13	1.2871	307 50	0.8218	+0.005	8.900	295
	14 0.668	0.9967	63 57	1.2864	306 48	0.8272	+0.001	8.858	273
	15 +0.675	0.9969	63 41	1.2858	305 46	-0.8323	-0.003	8.774	248
	16 +0.681	0.9970	63 26	1.2851	304 44	-0.8373	-0.006	8.670	212

## 224 APPARENT PLACES OF STARS, 1922.

## QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	$f$	Log. $g$	$G$	Log. $h$	$H$	Log. $i$	$f'$	Log. $g'$	$G'$
Feb. 16	+0.681	0.9970	63 26	1.2851	304 44	-0.8373	-0.006	8.670	212
17	0.687	0.9972	63 11	1.2845	303 41	0.8421	-0.006	8.618	166
18	0.693	0.9974	62 56	1.2839	302 38	0.8466	-0.004	8.693	122
19	0.699	0.9976	62 41	1.2833	301 35	0.8510	0.000	8.792	92
20	0.705	0.9978	62 26	1.2827	300 32	0.8553	+0.004	8.864	69
21	+0.711	0.9980	62 12	1.2821	299 29	-0.8593	+0.008	8.904	49
22	0.717	0.9982	61 58	1.2816	298 25	0.8632	+0.011	8.916	31
23	0.723	0.9984	61 44	1.2810	297 22	0.8669	+0.012	8.902	14
24	0.729	0.9987	61 31	1.2805	296 18	0.8704	+0.011	8.868	355
25	0.735	0.9990	61 18	1.2800	295 14	0.8738	+0.009	8.829	333
26	+0.740	0.9993	61 5	1.2795	294 10	-0.8770	+0.006	8.793	306
27	0.746	0.9996	60 52	1.2790	293 6	0.8801	+0.001	8.789	277
28	0.751	0.9999	60 39	1.2785	292 2	0.8830	-0.004	8.828	249
Mar. 1	0.757	1.0002	60 27	1.2781	290 58	0.8857	-0.008	8.886	225
2	0.762	1.0006	60 15	1.2777	289 53	0.8883	-0.012	8.942	204
3	+0.768	1.0009	60 3	1.2773	288 49	-0.8908	-0.015	8.980	184
4	0.773	1.0013	59 52	1.2769	287 44	0.8931	-0.015	8.996	167
5	0.778	1.0017	59 40	1.2765	286 40	0.8952	-0.013	8.983	149
6	0.783	1.0021	59 28	1.2762	285 35	0.8972	-0.008	8.941	129
7	0.788	1.0025	59 17	1.2759	284 31	0.8991	-0.003	8.866	105
8	+0.793	1.0030	59 6	1.2756	283 26	-0.9008	+0.003	8.776	73
9	0.798	1.0035	58 55	1.2753	282 21	0.9024	+0.007	8.729	33
10	0.803	1.0041	58 45	1.2750	281 16	0.9039	+0.009	8.768	353
11	0.808	1.0046	58 35	1.2748	280 11	0.9052	+0.008	8.837	322
12	0.813	1.0052	58 25	1.2746	279 6	0.9064	+0.005	8.877	297
13	+0.818	1.0057	58 15	1.2744	278 1	-0.9074	+0.001	8.871	276
14	0.822	1.0063	58 6	1.2742	276 56	0.9083	-0.003	8.818	253
15	0.827	1.0069	57 56	1.2740	275 51	0.9091	-0.006	8.728	222
16	0.831	1.0075	57 47	1.2739	274 46	0.9097	-0.007	8.646	181
17	0.836	1.0081	57 38	1.2738	273 41	0.9102	-0.005	8.663	136
18	+0.841	1.0088	57 29	1.2737	272 36	-0.9106	-0.002	8.763	100
19	0.845	1.0095	57 20	1.2736	271 31	0.9109	+0.003	8.849	74
20	0.850	1.0103	57 11	1.2736	270 26	0.9110	+0.007	8.907	54
21	0.855	1.0111	57 3	1.2737	269 21	0.9110	+0.011	8.934	36
22	0.860	1.0119	56 55	1.2737	268 16	0.9108	+0.013	8.934	18
23	+0.864	1.0127	56 47	1.2738	267 11	-0.9105	+0.012	8.902	1
24	0.869	1.0135	56 39	1.2738	266 7	0.9101	+0.010	8.862	341
25	0.874	1.0144	56 31	1.2739	265 2	0.9096	+0.007	8.818	317
26	0.879	1.0153	56 23	1.2740	263 57	0.9089	+0.003	8.796	289
27	0.883	1.0162	56 15	1.2742	262 53	0.9081	-0.002	8.804	261
28	+0.888	1.0171	56 7	1.2744	261 48	-0.9072	-0.006	8.844	235
29	0.893	1.0181	56 0	1.2746	260 44	0.9062	-0.010	8.902	212
30	0.898	1.0191	55 53	1.2748	259 39	0.9050	-0.013	8.944	191
31	0.903	1.0201	55 46	1.2750	258 35	0.9037	-0.014	8.969	172
Apr. 1	0.908	1.0211	55 39	1.2753	257 31	0.9022	-0.013	8.968	154
2	+0.913	1.0222	55 32	1.2756	256 27	-0.9006	-0.009	8.941	134
3	+0.918	1.0233	55 25	1.2759	255 23	-0.8989	-0.004	8.883	112

# APPARENT PLACES OF STARS, 1922. 225

## QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log. <i>g</i>	<i>G</i>	Log. <i>h</i>	<i>H</i>	Log. <i>i</i>	<i>f'</i>	Log. <i>g'</i>	<i>G'</i>
Apr. 3	+0.918 <sup>s</sup>	1.0233	55° 25'	1.2759	255° 23'	-0.8989	-0.004 <sup>s</sup>	8.883	112°
4	0.923	1.0244	55 18	1.2762	254 19	0.8971	+0.001	8.802	84
5	0.928	1.0255	55 11	1.2765	253 15	0.8951	+0.006	8.729	47
6	0.933	1.0267	55 4	1.2769	252 12	0.8929	+0.008	8.727	5
7	0.938	1.0279	54 58	1.2773	251 9	0.8907	+0.008	8.784	329
8	+0.943	1.0291	54 51	1.2777	250 6	-0.8883	+0.005	8.844	301
9	0.949	1.0303	54 44	1.2781	249 3	0.8857	+0.001	8.873	277
10	0.954	1.0316	54 37	1.2785	248 0	0.8830	-0.003	8.856	254
11	0.960	1.0329	54 31	1.2790	246 58	0.8802	-0.006	8.801	228
12	0.965	1.0342	54 24	1.2795	245 55	0.8772	-0.008	8.727	195
13	+0.971	1.0355	54 17	1.2800	244 52	-0.8741	-0.007	8.686	156
14	0.976	1.0369	54 11	1.2805	243 50	0.8709	-0.004	8.735	116
15	0.982	1.0383	54 5	1.2810	242 49	0.8675	+0.001	8.822	84
16	0.988	1.0397	53 58	1.2815	241 47	0.8639	+0.006	8.892	61
17	0.994	1.0411	53 51	1.2820	240 46	0.8602	+0.010	8.931	42
18	+1.000	1.0425	53 45	1.2826	239 44	-0.8563	+0.012	8.940	24
19	1.006	1.0440	53 39	1.2832	238 43	0.8522	+0.013	8.925	6
20	1.012	1.0455	53 32	1.2837	237 42	0.8480	+0.012	8.889	347
21	1.018	1.0470	53 26	1.2843	236 41	0.8436	+0.009	8.841	326
22	1.024	1.0485	53 19	1.2849	235 40	0.8391	+0.005	8.803	300
23	+1.030	1.0500	53 12	1.2855	234 40	-0.8344	.000	8.799	272
24	1.036	1.0515	53 6	1.2861	233 40	0.8295	-0.004	8.823	244
25	1.042	1.0530	52 59	1.2867	232 40	0.8244	-0.009	8.867	220
26	1.049	1.0546	52 52	1.2873	231 40	0.8192	-0.012	8.912	199
27	1.056	1.0562	52 45	1.2880	230 40	0.8137	-0.013	8.941	179
28	+1.062	1.0578	52 38	1.2886	229 41	-0.8081	-0.013	8.949	159
29	1.069	1.0594	52 31	1.2892	228 42	0.8022	-0.010	8.934	138
30	1.076	1.0610	52 24	1.2898	227 43	0.7962	-0.005	8.894	117
May 1	1.083	1.0626	52 17	1.2905	226 44	0.7900	.000	8.833	90
2	1.090	1.0642	52 9	1.2911	225 45	0.7835	+0.005	8.773	57
3	+1.097	1.0659	52 2	1.2918	224 46	-0.7768	+0.008	8.749	20
4	1.104	1.0676	51 55	1.2924	223 48	0.7699	+0.009	8.777	342
5	1.112	1.0693	51 48	1.2930	222 50	0.7628	+0.007	8.830	311
6	1.119	1.0710	51 40	1.2937	221 52	0.7554	+0.003	8.865	284
7	1.127	1.0726	51 33	1.2943	220 54	0.7478	-0.002	8.864	260
8	+1.134	1.0743	51 25	1.2949	219 57	-0.7399	-0.006	8.841	234
9	1.142	1.0760	51 18	1.2955	219 0	0.7317	-0.009	8.790	205
10	1.149	1.0777	51 10	1.2961	218 3	0.7233	-0.008	8.747	171
11	1.157	1.0794	51 2	1.2967	217 6	0.7146	-0.006	8.751	133
12	1.165	1.0811	50 54	1.2973	216 9	0.7056	-0.002	8.804	99
13	+1.173	1.0828	50 46	1.2979	215 13	-0.6962	+0.003	8.867	72
14	1.180	1.0845	50 38	1.2985	214 17	0.6865	+0.008	8.913	50
15	1.188	1.0863	50 29	1.2991	213 21	0.6765	+0.011	8.933	31
16	1.197	1.0880	50 21	1.2997	212 25	0.6662	+0.013	8.927	12
17	1.206	1.0897	50 13	1.3002	211 29	0.6554	+0.012	8.896	353
18	+1.214	1.0914	50 4	1.3008	210 33	-0.6443	+0.010	8.857	333
19	+1.223	1.0931	49 56	1.3014	209 37	-0.6327	+0.006	8.815	309

## 226 APPARENT PLACES OF STARS, 1922.

## QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	$f$	Log. $g$	$G$	Log. $h$	$H$	Log. $i$	$f'$	Log. $g'$	$G'$
May 19	+1.223	1.0931	49 56	1.3014	209 37	-0.6327	+0.006	8.815	309
20	1.231	1.0948	49 47	1.3019	208 42	0.6207	+0.002	8.793	281
21	1.240	1.0965	49 39	1.3024	207 47	0.6083	-0.003	8.812	253
22	1.249	1.0982	49 30	1.3029	206 52	0.5954	-0.007	8.855	228
23	1.257	1.1000	49 21	1.3034	205 57	0.5819	-0.011	8.898	205
24	+1.266	1.1017	49 12	1.3039	205 2	-0.5679	-0.013	8.931	185
25	1.275	1.1034	49 3	1.3044	204 8	0.5533	-0.013	8.943	165
26	1.284	1.1051	48 54	1.3049	203 13	0.5381	-0.011	8.931	145
27	1.293	1.1068	48 45	1.3053	202 19	0.5222	-0.007	8.899	122
28	1.302	1.1085	48 35	1.3057	201 25	0.5055	-0.001	8.847	96
29	+1.311	1.1102	48 25	1.3061	200 31	-0.4881	+0.004	8.801	64
30	1.320	1.1119	48 16	1.3065	199 37	0.4699	+0.008	8.783	30
31	1.329	1.1136	48 6	1.3069	198 43	0.4507	+0.010	8.800	355
June 1	1.338	1.1152	47 57	1.3073	197 49	0.4305	+0.009	8.837	324
2	1.348	1.1168	47 47	1.3076	196 56	0.4092	+0.005	8.862	297
3	+1.357	1.1185	47 37	1.3080	196 2	-0.3867	0.000	8.863	271
4	1.367	1.1201	47 27	1.3083	195 9	0.3629	-0.005	8.844	244
5	1.376	1.1217	47 17	1.3086	194 16	0.3375	-0.008	8.809	216
6	1.386	1.1233	47 7	1.3089	193 23	0.3105	-0.009	8.769	183
7	1.395	1.1250	46 57	1.3092	192 29	0.2815	-0.007	8.756	147
8	+1.405	1.1266	46 47	1.3095	191 36	-0.2504	-0.004	8.791	113
9	1.415	1.1282	46 37	1.3097	190 43	0.2167	+0.001	8.848	84
10	1.425	1.1298	46 26	1.3099	189 50	0.1800	+0.006	8.885	59
11	1.435	1.1315	46 16	1.3101	188 57	0.1399	+0.010	8.913	38
12	1.444	1.1331	46 5	1.3103	188 4	0.0955	+0.012	8.914	19
13	+1.454	1.1346	45 55	1.3105	187 11	-0.0459	+0.012	8.898	0
14	1.464	1.1360	45 44	1.3106	186 19	9.9898	+0.010	8.861	339
15	1.474	1.1375	45 34	1.3107	185 26	9.9253	+0.007	8.819	316
16	1.483	1.1390	45 23	1.3108	184 34	9.8493	+0.003	8.794	289
17	1.493	1.1405	45 12	1.3109	183 41	9.7569	-0.002	8.798	260
18	+1.503	1.1420	45 1	1.3110	182 49	-9.6394	-0.006	8.838	233
19	1.512	1.1435	44 51	1.3110	181 56	9.4775	-0.010	8.896	211
20	1.522	1.1450	44 40	1.3111	181 4	9.2165	-0.013	8.936	191
21	1.532	1.1464	44 29	1.3111	180 11	-8.4608	-0.014	8.949	172
22	1.542	1.1478	44 18	1.3111	179 19	+9.0282	-0.012	8.946	152
23	+1.552	1.1492	44 7	1.3110	178 26	+9.3845	-0.008	8.921	131
24	1.561	1.1506	43 56	1.3110	177 34	9.5774	-0.003	8.870	107
25	1.571	1.1520	43 45	1.3110	176 41	9.7104	+0.002	8.818	76
26	1.581	1.1534	43 33	1.3109	175 48	9.8120	+0.007	8.796	41
27	1.591	1.1548	43 22	1.3108	174 56	9.8941	+0.010	8.814	6
28	+1.601	1.1562	43 11	1.3107	174 3	+9.9631	+0.010	8.846	336
29	1.611	1.1575	43 0	1.3106	173 11	0.0225	+0.007	8.876	310
30	1.621	1.1588	42 49	1.3104	172 18	0.0746	+0.003	8.877	285
July 1	1.630	1.1601	42 38	1.3102	171 26	0.1210	-0.002	8.847	259
2	1.640	1.1614	42 27	1.3100	170 33	0.1628	-0.006	8.799	230
3	+1.650	1.1627	42 16	1.3098	169 40	+0.2008	-0.008	8.753	196
4	+1.660	1.1639	42 5	1.3096	168 47	+0.2357	-0.008	8.736	160



# APPARENT PLACES OF STARS, 1922. 227

## QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log. <i>g</i>	<i>G</i>	Log. <i>h</i>	<i>H</i>	Log. <i>i</i>	<i>f'</i>	Log. <i>g'</i>	<i>G'</i>		
July	4	+1.660	1.1639	42° 5'	1.3096	168 47	+0.2357	— .008	8.736	160	
	5	1.669	1.1652	41 54	1.3094	167 55	0.2678	— .005	8.773	123	
	6	1.679	1.1664	41 43	1.3091	167 2	0.2976	— .001	8.826	93	
	7	1.688	1.1676	41 32	1.3088	166 9	0.3254	+ .004	8.873	68	
	8	1.697	1.1688	41 20	1.3085	165 16	0.3514	+ .009	8.900	45	
	9	+1.707	1.1700	41 9	1.3082	164 23	+0.3759	+ .011	8.912	25	
	10	1.716	1.1712	40 58	1.3079	163 29	0.3989	+ .012	8.898	5	
	11	1.726	1.1723	40 47	1.3075	162 36	0.4206	+ .011	8.866	345	
	12	1.735	1.1734	40 36	1.3071	161 42	0.4412	+ .008	8.827	323	
	13	1.744	1.1745	40 25	1.3067	160 49	0.4608	+ .004	8.794	296	
	14	+1.753	1.1756	40 14	1.3063	159 55	+0.4794	— .001	8.800	267	
	15	1.762	1.1767	40 3	1.3059	159 2	0.4971	— .005	8.832	240	
	16	1.771	1.1778	39 53	1.3055	158 8	0.5140	— .009	8.889	217	
	17	1.780	1.1789	39 42	1.3051	157 14	0.5302	— .013	8.940	197	
	18	1.789	1.1799	39 31	1.3047	156 20	0.5457	— .014	8.965	178	
	19	+1.798	1.1809	39 20	1.3042	155 26	+0.5605	— .013	8.968	160	
	20	1.807	1.1819	39 9	1.3037	154 31	0.5747	— .011	8.949	141	
	21	1.816	1.1829	38 58	1.3032	153 36	0.5883	— .006	8.896	119	
	22	1.825	1.1839	38 47	1.3027	152 42	0.6015	— .000	8.833	91	
	23	1.834	1.1849	38 37	1.3022	151 47	0.6141	+ .005	8.784	57	
	24	+1.842	1.1858	38 27	1.3016	150 52	+0.6263	+ .009	8.789	20	
	25	1.851	1.1868	38 16	1.3011	149 57	0.6380	+ .010	8.832	347	
	26	1.859	1.1877	38 6	1.3005	149 2	0.6492	+ .009	8.867	319	
	27	1.867	1.1886	37 56	1.3000	148 7	0.6601	+ .005	8.882	295	
	28	1.875	1.1895	37 46	1.2994	147 12	0.6706	— .000	8.857	271	
	29	+1.883	1.1904	37 35	1.2989	146 16	+0.6807	— .004	8.807	245	
	30	1.891	1.1913	37 25	1.2983	145 20	0.6905	— .007	8.734	211	
	31	1.899	1.1922	37 15	1.2977	144 24	0.7000	— .007	8.689	172	
	Aug.	1	1.907	1.1931	37 5	1.2971	143 28	0.7091	— .005	8.719	130
		2	1.915	1.1939	36 55	1.2965	142 32	0.7180	— .001	8.796	98
		3	+1.923	1.1947	36 45	1.2959	141 36	+0.7265	+ .003	8.872	72
4		1.931	1.1955	36 35	1.2953	140 39	0.7347	+ .008	8.911	51	
5		1.938	1.1963	36 26	1.2946	139 42	0.7427	+ .011	8.926	31	
6		1.946	1.1971	36 16	1.2940	138 45	0.7504	+ .013	8.919	11	
7		1.953	1.1978	36 7	1.2934	137 48	0.7579	+ .012	8.888	352	
8		+1.960	1.1986	35 58	1.2928	136 51	+0.7652	+ .009	8.848	330	
9		1.967	1.1994	35 49	1.2922	135 53	0.7722	+ .006	8.805	306	
10		1.974	1.2001	35 40	1.2916	134 55	0.7789	+ .001	8.796	277	
11		1.981	1.2009	35 31	1.2909	133 57	0.7855	— .004	8.815	249	
12		1.988	1.2016	35 22	1.2903	132 59	0.7918	— .008	8.869	224	
13		+1.995	1.2023	35 13	1.2896	132 1	+0.7979	— .012	8.925	202	
14		2.002	1.2030	35 4	1.2890	131 2	0.8038	— .014	8.964	184	
15		2.009	1.2037	34 55	1.2884	130 4	0.8096	— .014	8.980	167	
16		2.015	1.2043	34 47	1.2878	129 5	0.8151	— .012	8.977	149	
17		2.022	1.2050	34 39	1.2872	128 6	0.8204	— .008	8.934	130	
18		+2.028	1.2057	34 31	1.2866	127 7	+0.8256	— .003	8.862	106	
19		+2.034	1.2064	34 23	1.2860	126 7	+0.8306	+ .002	8.777	75	

## 228 APPARENT PLACES OF STARS, 1922.

## QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log. <i>g</i>	<i>G</i>	Log. <i>h</i>	<i>H</i>	Log. <i>i</i>	<i>f'</i>	Log. <i>g'</i>	<i>G'</i>
Aug. 19	<sup>s</sup> +2.034	1.2064	34 <sup>o</sup> 23	1.2860	126 <sup>o</sup> 7	+0.8306	<sup>s</sup> +0.002	8.777	75 <sup>o</sup>
20	2.041	1.2071	34 15	1.2854	125 8	0.8354	+0.007	8.727	36
21	2.047	1.2077	34 8	1.2848	124 8	0.8400	+0.009	8.760	356
22	2.053	1.2084	34 0	1.2842	123 8	0.8444	+0.008	8.826	325
23	2.059	1.2090	33 53	1.2836	122 8	0.8487	+0.006	8.868	300
24	+2.065	1.2096	33 45	1.2830	121 7	+0.8528	+0.001	8.872	277
25	2.071	1.2102	33 38	1.2825	120 7	0.8568	-0.003	8.832	253
26	2.077	1.2109	33 31	1.2819	119 6	0.8606	-0.006	8.752	225
27	2.083	1.2115	33 24	1.2814	118 5	0.8643	-0.007	8.670	187
28	2.089	1.2121	33 17	1.2809	117 4	0.8678	-0.006	8.667	141
29	+2.094	1.2127	33 10	1.2804	116 3	+0.8712	-0.002	8.760	103
30	2.100	1.2133	33 3	1.2799	115 2	0.8744	+0.003	8.852	76
Sept. 31	2.105	1.2139	32 56	1.2795	114 0	0.8775	+0.007	8.912	54
1	2.111	1.2145	32 50	1.2790	112 59	0.8804	+0.011	8.947	35
2	2.116	1.2151	32 44	1.2786	111 57	0.8832	+0.013	8.948	17
3	+2.121	1.2158	32 38	1.2781	110 55	+0.8858	+0.013	8.925	359
4	2.127	1.2164	32 32	1.2777	109 53	0.8883	+0.011	8.885	339
5	2.132	1.2170	32 26	1.2773	108 51	0.8907	+0.008	8.838	316
6	2.137	1.2176	32 21	1.2769	107 48	0.8929	+0.003	8.802	289
7	2.142	1.2182	32 15	1.2765	106 46	0.8950	-0.002	8.800	259
8	+2.147	1.2188	32 10	1.2762	105 43	+0.8970	-0.006	8.831	233
9	2.152	1.2194	32 5	1.2759	104 40	0.8988	-0.010	8.887	210
10	2.157	1.2200	32 0	1.2756	103 37	0.9005	-0.013	8.940	190
11	2.162	1.2207	31 55	1.2753	102 34	0.9021	-0.014	8.967	172
12	2.167	1.2213	31 50	1.2750	101 31	0.9035	-0.013	8.975	154
13	+2.172	1.2219	31 46	1.2748	100 28	+0.9048	-0.010	8.956	136
14	2.177	1.2225	31 41	1.2746	99 24	0.9060	-0.005	8.898	116
15	2.182	1.2231	31 37	1.2744	98 21	0.9071	0.000	8.806	90
16	2.187	1.2237	31 33	1.2742	97 17	0.9080	+0.004	8.706	56
17	2.192	1.2243	31 29	1.2741	96 13	0.9088	+0.007	8.683	12
18	+2.196	1.2249	31 25	1.2740	95 9	+0.9095	+0.008	8.750	333
19	2.201	1.2255	31 21	1.2739	94 5	0.9101	+0.006	8.826	303
20	2.206	1.2262	31 17	1.2738	93 1	0.9105	+0.002	8.863	279
21	2.210	1.2269	31 14	1.2737	91 57	0.9108	-0.003	8.857	257
22	2.215	1.2276	31 11	1.2737	90 53	0.9110	-0.006	8.806	231
23	+2.220	1.2283	31 7	1.2737	89 49	+0.9110	-0.008	8.725	200
24	2.225	1.2290	31 4	1.2738	88 45	0.9109	-0.007	8.676	158
25	2.230	1.2297	31 1	1.2738	87 41	0.9107	-0.004	8.725	115
26	2.235	1.2304	30 58	1.2739	86 37	0.9104	+0.001	8.823	83
27	2.239	1.2311	30 55	1.2740	85 33	0.9099	+0.007	8.907	59
28	+2.244	1.2318	30 52	1.2741	84 29	+0.9093	+0.011	8.955	39
29	2.248	1.2325	30 49	1.2742	83 25	0.9086	+0.013	8.973	22
30	2.253	1.2333	30 47	1.2743	82 20	0.9077	+0.014	8.960	4
Oct. 1	2.258	1.2340	30 45	1.2745	81 16	0.9067	+0.013	8.924	346
2	2.263	1.2348	30 43	1.2747	80 12	0.9056	+0.009	8.875	325
3	+2.268	1.2355	30 41	1.2749	79 8	+0.9044	+0.005	8.823	301
4	+2.273	1.2363	30 39	1.2752	78 4	+0.9030	+0.001	8.793	274

# APPARENT PLACES OF STARS, 1922. 229

## QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	<i>f</i>	Log. <i>g</i>	<i>G</i>	Log. <i>h</i>	<i>H</i>	Log. <i>i</i>	<i>f'</i>	Log. <i>g'</i>	<i>G'</i>		
Oct.	4	+2.273	1.2363	30° 39	1.2752	78° 4	+0.9030	+0.001	8.793	274	
	5	2.278	1.2371	30 37	1.2755	77 0	0.9015	—0.004	8.806	245	
	6	2.283	1.2379	30 35	1.2758	75 56	0.8998	—0.008	8.848	219	
	7	2.288	1.2387	30 33	1.2761	74 52	0.8980	—0.012	8.901	197	
	8	2.293	1.2396	30 31	1.2764	73 48	0.8961	—0.013	8.938	178	
	9	+2.298	1.2404	30 29	1.2767	72 44	+0.8940	—0.013	8.951	160	
	10	2.303	1.2413	30 28	1.2771	71 41	0.8918	—0.011	8.943	141	
	11	2.308	1.2421	30 26	1.2775	70 37	0.8895	—0.007	8.908	121	
	12	2.313	1.2430	30 25	1.2779	69 34	0.8870	—0.002	8.838	99	
	13	2.318	1.2439	30 24	1.2783	68 30	0.8843	+0.003	8.745	69	
	14	+2.323	1.2448	30 22	1.2788	67 27	+0.8815	+0.006	8.662	28	
	15	2.329	1.2457	30 21	1.2793	66 23	0.8786	+0.007	8.691	343	
	16	2.334	1.2466	30 20	1.2798	65 20	0.8755	+0.006	8.772	309	
	17	2.340	1.2475	30 18	1.2803	64 17	0.8723	+0.002	8.848	282	
	18	2.346	1.2485	30 17	1.2808	63 14	0.8689	—0.002	8.872	259	
	19	+2.352	1.2495	30 16	1.2813	62 11	+0.8653	—0.006	8.851	235	
	20	2.358	1.2505	30 15	1.2819	61 9	0.8616	—0.009	8.805	208	
	21	2.364	1.2515	30 13	1.2824	60 6	0.8577	—0.009	8.746	174	
	22	2.370	1.2525	30 12	1.2830	59 3	0.8536	—0.006	8.733	134	
	23	2.376	1.2535	30 11	1.2836	58 1	0.8494	—0.001	8.802	96	
	24	+2.382	1.2546	30 10	1.2842	56 59	+0.8450	+0.004	8.888	68	
	25	2.388	1.2556	30 9	1.2848	55 57	0.8404	+0.009	8.945	46	
	26	2.394	1.2567	30 8	1.2854	54 55	0.8356	+0.013	8.972	27	
	27	2.401	1.2578	30 7	1.2860	53 53	0.8306	+0.014	8.975	10	
	28	2.407	1.2589	30 6	1.2866	52 51	0.8254	+0.014	8.950	353	
	Nov.	29	+2.414	1.2600	30 4	1.2872	51 50	+0.8201	+0.011	8.907	333
		30	2.420	1.2611	30 3	1.2879	50 49	0.8145	+0.007	8.852	311
		31	2.427	1.2622	30 2	1.2885	49 48	0.8088	+0.003	8.813	285
1		2.434	1.2634	30 1	1.2892	48 47	0.8028	—0.002	8.798	256	
2		2.441	1.2645	30 0	1.2898	47 46	0.7966	—0.007	8.816	228	
3		+2.448	1.2657	29 59	1.2905	46 45	+0.7901	—0.010	8.860	204	
4		2.455	1.2668	29 58	1.2911	45 44	0.7834	—0.012	8.900	184	
5		2.462	1.2680	29 57	1.2918	44 44	0.7765	—0.012	8.923	165	
6		2.469	1.2692	29 55	1.2924	43 44	0.7694	—0.011	8.927	145	
7		2.477	1.2704	29 54	1.2931	42 44	0.7619	—0.007	8.907	125	
8		+2.484	1.2716	29 52	1.2937	41 44	+0.7542	—0.002	8.856	103	
9		2.492	1.2728	29 51	1.2944	40 44	0.7463	+0.002	8.777	75	
10		2.499	1.2740	29 49	1.2950	39 45	0.7380	+0.006	8.709	40	
11		2.507	1.2752	29 48	1.2956	38 45	0.7295	+0.008	8.694	359	
12		2.515	1.2765	29 46	1.2963	37 45	0.7206	+0.007	8.754	321	
13		+2.523	1.2778	29 44	1.2969	36 46	+0.7114	+0.004	8.826	290	
14		2.531	1.2791	29 43	1.2976	35 47	0.7018	—0.001	8.865	264	
15		2.539	1.2804	29 41	1.2982	34 48	0.6919	—0.006	8.868	242	
16		2.548	1.2817	29 39	1.2988	33 49	0.6816	—0.009	8.858	216	
17	2.557	1.2830	29 37	1.2994	32 50	0.6709	—0.010	8.805	187		
18	+2.565	1.2843	29 35	1.3000	31 51	+0.6599	—0.008	8.778	152		
19	+2.574	1.2856	29 33	1.3006	30 53	+0.6484	—0.004	8.791	115		

# 230 APPARENT PLACES OF STARS, 1922.

## QUANTITIES FOR CORRECTING THE PLACES OF STARS.

Mean Midnight.	$f$	Log. $g$	$G$	Log. $h$	$H$	Log. $i$	$f'$	Log. $g'$	$G'$
Nov. 19	<sup>s</sup> +2.574	1.2856	<sup>o</sup> 29 33	1.3006	<sup>o</sup> 30 53	+0.6484	<sup>s</sup> -0.004	8.791	<sup>o</sup> 115
20	2.582	1.2869	29 31	1.3012	29 55	0.6364	+0.002	8.849	82
21	2.591	1.2882	29 28	1.3018	28 57	0.6239	+0.007	8.908	56
22	2.600	1.2895	29 26	1.3024	27 59	0.6110	+0.011	8.953	35
23	2.609	1.2908	29 23	1.3029	27 1	0.5975	+0.014	8.969	16
24	+2.618	1.2921	29 21	1.3034	26 3	+0.5834	+0.014	8.957	358
25	2.627	1.2934	29 18	1.3039	25 6	0.5687	+0.012	8.923	339
26	2.636	1.2947	29 15	1.3044	24 8	0.5533	+0.009	8.875	318
27	2.646	1.2960	29 12	1.3049	23 10	0.5372	+0.004	8.824	294
28	2.655	1.2973	29 9	1.3054	22 13	0.5204	-0.001	8.793	266
29	+2.665	1.2987	29 6	1.3058	21 16	+0.5027	-0.005	8.804	238
30	2.674	1.3000	29 3	1.3062	20 19	0.4842	-0.009	8.841	212
Dec. 1	2.684	1.3014	29 0	1.3066	19 22	0.4646	-0.012	8.882	191
2	2.693	1.3027	28 57	1.3070	18 25	0.4440	-0.012	8.908	171
3	2.703	1.3041	28 53	1.3074	17 29	0.4223	-0.011	8.915	151
4	+2.713	1.3054	28 50	1.3078	16 32	+0.3992	-0.008	8.903	130
5	2.723	1.3067	28 46	1.3082	15 35	0.3747	-0.003	8.871	107
6	2.733	1.3080	28 42	1.3085	14 38	0.3485	+0.002	8.812	80
7	2.743	1.3093	28 38	1.3088	13 42	0.3205	+0.006	8.765	49
8	2.753	1.3106	28 34	1.3091	12 45	0.2904	+0.008	8.741	13
9	+2.763	1.3119	28 30	1.3094	11 48	+0.2580	+0.008	8.765	336
10	2.773	1.3132	28 26	1.3097	10 52	0.2227	+0.006	8.812	304
11	2.783	1.3145	28 22	1.3099	9 56	0.1842	+0.001	8.859	276
12	2.793	1.3158	28 18	1.3101	8 59	0.1418	-0.004	8.876	251
13	2.803	1.3171	28 14	1.3103	8 3	0.0945	-0.008	8.866	225
14	+2.814	1.3184	28 9	1.3105	7 7	+0.0414	-0.010	8.833	197
15	2.824	1.3196	28 4	1.3106	6 11	9.9807	-0.009	8.800	165
16	2.834	1.3209	27 59	1.3107	5 15	9.9099	-0.006	8.797	130
17	2.844	1.3222	27 54	1.3108	4 19	9.8250	-0.001	8.829	96
18	2.854	1.3235	27 49	1.3109	3 23	9.7193	+0.004	8.878	68
19	+2.865	1.3247	27 44	1.3110	2 27	+9.5791	+0.009	8.919	43
20	2.875	1.3260	27 39	1.3110	1 31	9.3704	+0.012	8.944	23
21	2.885	1.3272	27 34	1.3111	0 35	+8.9539	+0.013	8.944	4
22	2.896	1.3284	27 29	1.3111	359 39	-8.7401	+0.012	8.924	345
23	2.907	1.3296	27 24	1.3111	358 43	9.3005	+0.009	8.879	324
24	+2.917	1.3308	27 19	1.3110	357 47	-9.5373	+0.005	8.831	301
25	2.928	1.3320	27 14	1.3110	356 51	9.6895	+0.001	8.800	274
26	2.938	1.3332	27 9	1.3109	355 54	9.8019	-0.004	8.797	246
27	2.948	1.3343	27 3	1.3108	354 58	9.8910	-0.008	8.833	219
28	2.959	1.3355	26 58	1.3107	354 2	9.9648	-0.011	8.875	197
29	+2.969	1.3366	26 52	1.3105	353 5	-0.0277	-0.012	8.910	177
30	2.979	1.3377	26 46	1.3104	352 9	0.0826	-0.012	8.920	158
31	2.989	1.3388	26 40	1.3102	351 13	0.1312	-0.009	8.908	138
32	+2.999	1.3400	26 34	1.3100	350 17	-0.1747	-0.005	8.879	116

# APPARENT PLACES OF STARS, 1922. 231

AT UPPER TRANSIT AT GREENWICH.

$\alpha$  Ursæ Minoris (*Polaris*). Mag. 2.1

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>	
	I 32	88° 53'	I 32	88° 53'	I 32	88° 53'	I 32	88° 53'	I 32	88° 53'	I 32	88° 53'
1	<sup>s</sup> 91.00	33.73	<sup>s</sup> 56.62	34.54	<sup>s</sup> 29.61	30.14	<sup>s</sup> 14.18	21.33	<sup>s</sup> 18.47	11.82	<sup>s</sup> 39.74	4.77
2	80.87	33.86	55.53	34.42	28.84	29.88	14.10	21.02	18.88	11.58	40.55	4.59
3	88.71	33.96	54.47	34.31	28.13	29.61	14.04	20.74	19.25	11.33	41.42	4.40
4	87.58	34.04	53.45	34.20	27.47	29.35	13.95	20.46	19.62	11.06	42.37	4.22
5	86.47	34.12	52.48	34.09	26.85	29.11	13.82	20.19	20.01	10.79	43.39	4.04
6	85.40	34.19	51.53	34.00	26.25	28.87	13.66	19.90	20.44	10.50	44.47	3.89
7	84.37	34.25	50.58	33.91	25.63	28.65	13.47	19.59	20.95	10.20	45.57	3.75
8	83.37	34.32	49.61	33.84	24.98	28.43	13.28	19.27	21.55	9.91	46.67	3.64
9	82.39	34.40	48.58	33.76	24.29	28.21	13.14	18.94	22.23	9.62	47.72	3.54
10	81.41	34.48	47.49	33.67	23.56	27.98	13.06	18.59	22.95	9.35	48.74	3.45
11	80.40	34.58	46.37	33.57	22.82	27.73	13.08	18.24	23.69	9.10	49.72	3.35
12	79.34	34.68	45.24	33.44	22.09	27.46	13.18	17.90	24.42	8.87	50.67	3.26
13	78.22	34.78	44.13	33.29	21.42	27.16	13.34	17.57	25.11	8.65	51.60	3.16
14	77.04	34.87	43.05	33.11	20.82	26.84	13.54	17.26	25.77	8.43	52.53	3.06
15	75.81	34.92	42.06	32.92	20.30	26.53	{ <sup>13.75</sup> <sub>13.95</sub> }	{ <sup>16.26</sup> <sub>16.26</sub> }	26.39	8.22	53.47	2.94
16	74.57	34.96	41.15	32.73	19.86	26.23	14.11	16.38	27.00	7.99	54.44	2.82
17	73.36	34.98	40.30	32.54	19.47	25.94	14.24	16.10	27.61	7.77	55.44	2.71
18	72.20	34.96	39.47	32.36	19.11	25.65	14.35	15.81	28.23	7.53	56.49	2.60
19	71.10	34.95	38.66	32.19	18.74	25.38	14.46	15.51	28.88	7.29	57.58	2.50
20	70.05	34.93	37.82	32.04	18.33	25.12	14.57	15.20	29.56	7.04	58.71	2.41
21	69.05	34.91	36.94	31.88	17.91	24.85	14.70	14.88	30.30	6.79	59.89	2.34
22	68.05	34.90	36.04	31.72	17.46	24.58	14.88	14.55	31.08	6.55	61.08	2.29
23	67.03	34.92	35.09	31.54	16.98	24.29	15.09	14.21	31.91	6.32	62.27	2.26
24	65.97	34.92	34.13	31.33	16.51	23.99	15.37	13.88	32.80	6.10	63.43	2.24
25	64.86	34.92	33.17	31.12	16.06	23.67	15.71	13.55	33.73	5.89	64.54	2.24
26	63.72	34.92	32.23	30.89	15.63	23.35	16.10	13.22	34.67	5.70	65.60	2.23
27	62.54	34.90	31.31	30.65	15.25	23.01	16.54	12.91	35.60	5.53	66.61	2.22
28	61.34	34.86	30.44	30.40	14.91	22.67	17.03	12.62	36.50	5.37	67.60	2.20
29	60.14	34.81	29.61	30.14	14.63	22.33	17.54	12.35	37.36	5.23	68.59	2.17
30	58.93	34.73			14.42	21.99	18.02	12.08	38.17	5.09	69.63	2.13
31	57.76	34.64			14.28	21.65	18.47	11.82	38.96	4.94	70.73	2.09
32	56.62	34.54			14.18	21.33			39.74	4.77		

Mean R.A. 1<sup>h</sup> 32<sup>m</sup> 41.<sup>s</sup>459 Mean Dec. +88° 53' 15".91 Sec  $\delta$  51.517 Tan  $\delta$  + 51.507

## 232 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

 $\alpha$  Ursæ Minoris (*Polaris*). Mag. 2.1

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> I 33 88 53		<sup>h</sup> <sup>m</sup> I 33 88 53		<sup>h</sup> <sup>m</sup> I 34 88 53		<sup>h</sup> <sup>m</sup> I 34 88 53		<sup>h</sup> <sup>m</sup> I 34 88 53		<sup>h</sup> <sup>m</sup> I 33 88 53	
1	10.73	2.09	45.82	4.41	15.83	11.51	34.20	21.44	38.27	32.90	86.24	42.96
2	11.89	2.06	47.01	4.59	16.58	11.82	34.49	21.79	38.12	33.23	85.65	43.24
3	13.12	2.03	48.14	4.78	17.28	12.12	34.78	22.13	37.98	33.57	85.06	43.52
4	14.38	2.03	49.21	4.98	17.97	12.41	35.08	22.46	37.87	33.90	84.46	43.81
5	15.64	2.05	50.23	5.17	18.64	12.70	35.39	22.80	37.76	34.26	83.82	44.11
6	16.86	2.10	51.20	5.37	19.32	12.97	35.72	23.14	37.66	34.62	83.13	44.41
7	18.03	2.15	52.14	5.56	20.02	13.25	36.07	23.48	37.51	35.00	82.36	44.71
8	19.15	2.21	53.08	5.74	20.74	13.53	36.44	23.83	37.33	35.39	81.52	45.00
9	20.23	2.27	54.02	5.91	21.48	13.81	36.82	24.19	37.07	35.78	80.63	45.27
10	21.27	2.32	54.97	6.08	22.24	14.09	37.18	24.56	36.73	36.16	79.71	45.52
11	22.31	2.37	55.95	6.25	23.02	14.39	37.51	24.96	36.33	36.54	78.79	45.76
12	23.34	2.40	56.95	6.43	23.81	14.71	37.79	25.36	35.89	36.90	77.91	45.98
13	24.40	2.44	57.98	6.61	24.58	15.05	37.99	25.78	35.43	37.24	77.08	46.19
14	25.47	2.47	59.05	6.80	25.31	15.39	38.11	26.18	34.98	37.57	76.31	46.42
15	26.57	2.51	60.13	7.01	25.99	15.75	38.18	26.58	34.58	37.90	75.57	46.62
16	27.71	2.55	61.22	7.24	26.59	16.12	38.22	26.95	34.22	38.21	74.82	46.85
17	28.89	2.61	62.28	7.49	27.13	16.48	38.26	27.32	33.91	38.53	74.05	47.09
18	30.10	2.67	63.30	7.75	27.61	16.83	38.32	27.67	33.61	38.86	73.22	47.35
19	31.34	2.75	64.25	8.03	28.08	17.17	38.43	28.02	33.29	39.21	72.32	47.60
20	32.58	2.85	65.15	8.30	28.57	17.50	38.59	28.36	32.92	39.57	71.36	47.84
21	33.78	2.98	65.98	8.56	29.10	17.82	38.79	28.73	32.48	39.93	70.34	48.05
22	34.94	3.12	66.80	8.82	29.68	18.13	38.99	29.12	31.98	40.29	69.28	48.25
23	36.04	3.27	67.61	9.06	30.30	18.46	39.15	29.50	31.41	40.64	68.21	48.43
24	37.07	3.41	68.45	9.30	30.95	18.80	39.25	29.91	30.78	40.97	67.15	48.58
25	38.07	3.55	69.35	9.53	31.58	19.16	39.28	30.32	30.12	41.29	66.10	48.74
26	39.06	3.67	70.29	9.78	32.18	19.53	39.23	30.72	29.45	41.58	65.06	48.88
27	40.06	3.78	71.27	10.03	32.70	19.92	39.13	31.11	28.78	41.87	64.05	49.01
28	41.12	3.89	72.27	10.30	33.16	20.31	38.98	31.49	28.12	42.15	63.08	49.14
29	42.24	4.00	73.25	10.58	33.55	20.69	38.80	31.86	27.48	42.42	62.13	49.27
30	43.41	4.12	74.17	10.89	33.89	21.07	38.63	32.21	26.85	42.69	61.19	49.41
31	44.61	4.26	75.03	11.20	34.20	21.44	38.44	32.56	26.24	42.96	60.25	49.56
32	45.82	4.41	75.83	11.51			38.27	32.90			59.29	49.72

Mean R.A.  $1^h 32^m 41^s.459$  Mean Dec.  $+88^\circ 53' 15''.91$  Sec  $\delta 51.517$  Tan  $\delta +51.507$

# APPARENT PLACES OF STARS, 1922. 233

## AT UPPER TRANSIT AT GREENWICH.

51 H Cephei. Mag. 5.3

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> 7	<sup>m</sup> 4	<sup>h</sup> 8	<sup>m</sup> 7	<sup>h</sup> 7	<sup>m</sup> 4	<sup>h</sup> 8	<sup>m</sup> 7	<sup>h</sup> 7	<sup>m</sup> 4	<sup>h</sup> 8	<sup>m</sup> 7
1	56.21	15.24	55.91	25.11	48.91	32.28	36.47	35.63	24.37	33.50	15.97	26.82
2	56.31	15.59	55.71	25.41	48.51	32.46	36.05	35.62	24.06	33.36	15.79	26.58
3	56.40	15.93	55.52	25.69	48.13	32.63	35.66	35.61	23.76	33.22	15.58	26.32
4	56.47	16.26	55.34	25.97	47.75	32.78	35.28	35.62	23.44	33.09	15.37	26.04
5	56.52	16.58	55.16	26.23	47.40	32.93	34.90	35.63	23.10	32.96	15.17	25.74
6	56.58	16.89	54.99	26.49	47.07	33.07	34.51	35.64	22.74	32.82	15.00	25.42
7	56.63	17.19	54.84	26.75	46.75	33.23	34.10	35.66	22.36	32.65	14.86	25.09
8	56.69	17.48	54.70	27.02	46.44	33.39	33.68	35.68	21.98	32.47	14.75	24.77
9	56.76	17.77	54.56	27.31	46.11	33.57	33.22	35.68	21.62	32.26	14.66	24.46
10	56.84	18.07	54.40	27.61	45.76	33.75	32.76	35.66	21.28	32.04	14.58	24.15
11	56.94	18.37	54.21	27.91	45.39	33.93	32.30	35.61	20.97	31.80	14.51	23.85
12	57.04	18.68	53.98	28.22	44.99	34.10	31.85	35.54	20.69	31.57	14.45	23.58
13	57.13	19.02	53.73	28.52	44.57	34.26	31.42	35.45	20.43	31.34	14.37	23.31
14	57.19	19.37	53.45	28.80	44.13	34.39	31.02	35.37	20.18	31.13	14.28	23.04
15	57.22	19.72	53.16	29.05	43.69	34.49	30.63	35.28	19.93	30.93	14.19	22.77
16	57.22	20.07	52.86	29.29	43.26	34.58	30.26	35.19	19.67	30.73	14.09	22.49
17	57.17	20.41	52.58	29.51	42.85	34.66	29.89	35.12	19.40	30.53	13.99	22.19
18	57.11	20.74	52.31	29.72	42.46	34.74	29.51	35.05	19.12	30.32	13.89	21.89
19	57.04	21.05	52.06	29.93	42.09	34.81	29.13	34.99	18.83	30.12	13.80	21.58
20	56.97	21.34	51.81	30.16	41.72	34.90	28.74	34.92	18.53	29.92	13.72	21.25
21	56.92	21.62	51.56	30.40	41.33	35.00	28.33	34.85	18.24	29.69	13.66	20.91
22	56.88	21.91	51.29	30.64	40.94	35.10	27.90	34.78	17.95	29.45	13.63	20.57
23	56.85	22.20	51.01	30.89	40.53	35.20	27.47	34.69	17.67	29.20	13.63	20.24
24	56.82	22.50	50.71	31.14	40.11	35.29	27.04	34.59	17.39	28.93	13.66	19.91
25	56.79	22.82	50.38	31.39	39.67	35.39	26.60	34.47	17.14	28.65	13.71	19.59
26	56.73	23.15	50.04	31.63	39.22	35.47	26.18	34.34	16.92	28.37	13.77	19.28
27	56.65	23.48	49.67	31.86	38.75	35.54	25.77	34.18	16.74	28.09	13.83	18.98
28	56.55	23.82	49.30	32.08	38.28	35.59	25.38	34.01	16.57	27.81	13.88	18.69
29	56.42	24.16	48.91	32.28	37.81	35.62	25.02	33.84	16.42	27.55	13.90	18.40
30	56.27	24.48			37.35	35.63	24.68	33.66	16.28	27.30	13.91	18.11
31	56.10	24.80			36.90	35.64	24.37	33.50	16.13	27.05	13.90	17.81
32	55.91	25.11			36.47	35.63			15.97	26.82		

Mean R.A. 7<sup>h</sup> 4<sup>m</sup> 29<sup>s</sup>.540 Mean Dec. + 87° 10' 27".24 Sec δ 20.284 Tan δ + 20.260

# 234 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

51 H Cephei. Mag. 5.3

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 7 4 87 10	<sup>°</sup> 17 81	<sup>h</sup> <sup>m</sup> 7 4 87 10	<sup>°</sup> 18 98	<sup>h</sup> <sup>m</sup> 7 4 87 9	<sup>°</sup> 30 18	<sup>h</sup> <sup>m</sup> 7 4 87 9	<sup>°</sup> 44 52	<sup>h</sup> <sup>m</sup> 7 5 87 9	<sup>°</sup> 56 75	<sup>h</sup> <sup>m</sup> 7 5 87 10	<sup>°</sup> 13 38
1	13.90	17.81	18.98	7.91	30.18	60.35	44.52	56.44	0.25	56.75	13.38	1.42
2	13.91	17.49	19.29	7.60	30.63	60.19	45.01	56.40	0.69	56.84	13.73	1.63
3	13.92	17.16	19.62	7.31	31.07	60.03	45.48	56.37	1.14	56.92	14.09	1.83
4	13.97	16.80	19.95	7.04	31.50	59.88	45.95	56.32	1.60	56.99	14.46	2.04
5	14.04	16.45	20.27	6.78	31.91	59.72	46.41	56.27	2.08	57.06	14.85	2.27
6	14.15	16.10	20.58	6.53	32.32	59.56	46.88	56.21	2.57	57.14	15.24	2.51
7	{14.28 14.42}	{15.77 15.45}	20.88	6.28	32.72	59.40	47.36	56.15	3.08	57.22	15.62	2.76
8	14.56	15.15	21.17	6.04	33.13	59.23	47.85	56.09	3.61	57.33	15.98	3.04
9	14.70	14.85	21.46	5.80	33.55	59.06	48.37	56.03	4.13	57.46	16.31	3.32
10	14.83	14.56	21.74	5.56	33.98	58.87	48.89	55.99	4.64	57.62	16.62	3.61
11	14.94	14.28	22.02	5.30	34.43	58.68	49.45	55.95	5.13	57.78	16.90	3.90
12	15.04	14.00	22.30	5.03	34.90	58.50	50.02	55.92	5.59	57.95	17.15	4.18
13	15.14	13.71	22.61	4.76	35.40	58.33	50.59	55.92	6.03	58.11	17.39	4.44
14	15.25	13.41	22.93	4.49	35.92	58.18	51.15	55.94	6.44	58.28	17.65	4.68
15	15.35	13.10	23.27	4.21	36.45	58.04	51.69	55.98	6.85	58.43	17.92	4.92
16	15.47	12.78	23.63	3.93	36.98	57.92	52.20	56.02	7.26	58.56	18.21	5.16
17	15.61	12.45	24.03	3.66	37.49	57.82	52.68	56.05	7.68	58.69	18.52	5.41
18	15.77	12.11	24.44	3.41	37.98	57.73	53.16	56.06	8.13	58.81	18.83	5.68
19	15.95	11.78	24.87	3.18	38.46	57.64	53.63	56.07	8.60	58.95	19.13	5.96
20	16.17	11.44	25.30	2.96	38.91	57.53	54.12	56.07	9.08	59.11	19.40	6.27
21	16.41	11.12	25.70	2.76	39.36	57.42	54.62	56.06	9.56	59.28	19.65	6.59
22	16.67	10.82	26.08	2.56	39.81	57.29	55.14	56.05	10.02	59.48	19.89	6.91
23	16.93	10.54	26.45	2.36	40.29	57.15	55.69	56.06	10.47	59.69	20.09	7.23
24	17.19	10.26	26.80	2.15	40.79	57.01	56.25	56.09	10.89	59.91	20.26	7.55
25	17.42	9.99	27.16	1.93	41.32	56.88	56.81	56.14	11.29	60.14	20.42	7.87
26	17.64	9.72	27.53	1.70	41.86	56.77	57.36	56.20	11.67	60.36	20.56	8.18
27	17.84	9.46	27.92	1.45	42.42	56.67	57.88	56.29	12.02	60.58	20.70	8.47
28	18.03	9.18	28.33	1.20	42.96	56.60	58.38	56.39	12.37	60.80	20.85	8.77
29	18.23	8.88	28.78	0.96	43.50	56.54	58.87	56.49	12.70	61.01	20.99	9.05
30	18.45	8.56	29.24	0.75	44.02	56.48	59.34	56.58	13.04	61.22	21.14	9.33
31	18.70	8.23	29.71	0.54	44.52	56.44	59.80	56.67	13.38	61.42	21.30	9.61
32	18.98	7.91	30.18	0.35			60.25	56.75			21.48	9.90

Mean R.A. 7<sup>h</sup> 4<sup>m</sup> 29<sup>s</sup>.540 Mean Dec. + 87° 10' 27".24 Sec δ 20.284 Tan δ + 20.260



# APPARENT PLACES OF STARS, 1922. 235

## AT UPPER TRANSIT AT GREENWICH.

4 B Ursæ Minoris. Mag. 7.0

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 8 21 88 51		<sup>h</sup> <sup>m</sup> 8 21 88 51		<sup>h</sup> <sup>m</sup> 8 21 88 52		<sup>h</sup> <sup>m</sup> 8 20 88 52		<sup>h</sup> <sup>m</sup> 8 20 88 52		<sup>h</sup> <sup>m</sup> 8 19 88 51	
	<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>	
1	33.13	45.86	43.18	55.42	34.48	3.98	68.69	10.22	37.50	11.14	69.73	66.78
2	33.76	46.16	43.05	55.75	33.77	4.25	67.71	10.31	36.60	11.07	69.00	66.59
3	34.33	46.45	42.91	56.07	33.05	4.51	66.76	10.40	35.69	11.01	68.23	66.39
4	34.86	46.75	42.76	56.37	32.34	4.75	65.85	10.50	34.77	10.97	67.42	66.18
5	35.35	47.04	42.63	56.67	31.67	4.98	64.96	10.60	33.80	10.93	66.62	65.95
6	35.80	47.33	42.54	56.96	31.04	5.21	64.07	10.71	32.77	10.88	65.85	65.70
7	36.25	47.61	42.48	57.25	30.45	5.44	63.13	10.83	31.69	10.81	65.13	65.42
8	36.70	47.87	42.45	57.55	29.88	5.69	62.11	10.96	30.58	10.72	64.49	65.14
9	37.18	48.13	42.41	57.87	29.30	5.94	61.03	11.07	29.48	10.61	63.91	64.87
10	37.70	48.40	42.34	58.21	28.68	6.20	59.90	11.15	28.42	10.47	63.39	64.60
11	38.26	48.67	42.22	58.54	27.99	6.45	58.75	11.21	27.41	10.33	62.90	64.34
12	38.83	48.96	42.02	58.89	27.22	6.71	57.60	11.25	26.48	10.18	62.41	64.08
13	39.39	49.26	41.73	59.23	26.38	6.95	56.48	11.27	25.60	10.03	61.91	63.84
14	39.92	49.58	41.37	59.56	25.48	7.18	55.41	11.28	24.75	9.88	61.39	63.60
15	40.37	49.91	40.96	59.87	24.56	7.38	54.40	11.29	23.91	9.75	60.86	63.36
16	40.72	50.25	40.54	60.16	23.65	7.56	53.42	11.30	23.06	9.63	60.30	63.12
17	41.00	50.59	40.11	60.44	22.77	7.74	52.46	11.33	22.19	9.51	59.73	62.87
18	41.21	50.91	39.71	60.72	21.93	7.91	51.49	11.36	21.30	9.39	59.14	62.60
19	41.39	51.21	39.35	60.99	21.13	8.08	50.50	11.39	20.38	9.25	58.56	62.32
20	41.56	51.51	39.00	61.27	20.35	8.26	49.48	11.42	19.44	9.11	58.01	62.02
21	41.75	51.80	38.66	61.56	19.55	8.45	48.42	11.46	18.48	8.97	57.49	61.72
22	41.97	52.09	38.31	61.86	18.73	8.65	47.33	11.49	17.51	8.81	57.03	61.41
23	42.22	52.38	37.91	62.17	17.88	8.85	46.20	11.51	16.54	8.64	56.63	61.08
24	42.48	52.69	37.46	62.49	16.98	9.04	45.05	11.52	15.60	8.45	56.30	60.76
25	42.73	53.01	36.97	62.80	16.03	9.23	43.89	11.50	14.71	8.25	56.04	60.44
26	42.95	53.35	36.43	63.11	15.04	9.42	42.73	11.47	13.85	8.03	55.81	60.14
27	43.13	53.69	35.82	63.41	14.02	9.59	41.59	11.43	13.07	7.80	55.61	59.85
28	43.25	54.05	35.16	63.71	12.97	9.75	40.48	11.37	12.35	7.57	55.40	59.58
29	43.32	54.40	34.48	63.98	11.89	9.89	39.43	11.30	11.68	7.36	55.14	59.31
30	43.32	54.75			10.80	10.02	38.44	11.22	11.04	7.16	54.83	59.03
31	43.27	55.09			9.73	10.13	37.50	11.14	10.40	6.97	54.48	58.74
32	43.18	55.42			8.69	10.22			9.73	6.78		

Mean R.A. 8<sup>h</sup> 20<sup>m</sup> 43<sup>s</sup>.867 Mean Dec. + 88° 52' 3".51 Sec δ 50.602 Tan δ + 50.592

## 236 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

4 B Ursæ Minoris. Mag. 7.0

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>	
	8 19	88 51	8 19	88 51	8 20	88 51	8 20	88 51	8 21	88 51	8 21	88 51
1	<sup>s</sup> 54.48	58.74	<sup>s</sup> 55.08	48.08	<sup>s</sup> 12.81	38.23	<sup>s</sup> 42.05	31.12	<sup>s</sup> 19.16	27.68	<sup>s</sup> 54.91	29.07
2	54.12	58.43	55.46	47.72	13.69	37.96	43.16	30.97	20.30	27.65	55.95	29.18
3	53.77	58.09	55.89	47.36	14.54	37.70	44.23	30.81	21.44	27.62	57.02	29.30
4	53.48	57.75	56.34	47.02	15.36	37.45	45.28	30.65	22.61	27.58	58.13	29.41
5	53.25	57.40	56.80	46.70	16.16	37.21	46.32	30.49	23.80	27.54	59.28	29.54
6	53.10	57.05	57.25	46.39	16.94	36.97	47.36	30.32	25.03	27.51	60.45	29.68
7	53.01	56.70	57.69	46.09	17.72	36.71	48.42	30.15	26.31	27.47	61.62	29.84
8	52.97	56.37	58.10	45.79	18.49	36.44	49.51	29.97	27.64	27.45	62.77	30.01
9	52.95	56.04	58.49	45.48	19.27	36.18	50.65	29.79	29.00	27.45	63.86	30.21
10	52.94	55.74	58.86	45.17	20.09	35.90	51.84	29.62	30.35	27.47	64.88	30.42
11	52.90	55.44	59.23	44.85	20.94	35.62	53.08	29.46	31.68	27.52	65.83	30.63
12	52.84	55.14	59.60	44.54	21.85	35.33	54.37	29.31	32.95	27.57	66.72	30.82
13	52.76	54.83	60.00	44.22	22.82	35.06	55.68	29.18	34.16	27.63	67.58	31.01
14	52.67	54.52	60.44	43.88	23.85	34.79	57.00	29.07	35.31	27.68	68.44	31.18
15	52.56	54.21	60.93	43.53	24.93	34.53	58.29	28.98	36.43	27.73	69.34	31.35
16	52.45	53.89	61.49	43.18	26.03	34.29	59.52	28.89	37.55	27.76	70.27	31.51
17	52.36	53.54	62.12	42.84	27.13	34.07	60.71	28.81	38.68	27.78	71.25	31.68
18	52.31	53.20	62.81	42.50	28.19	33.86	61.84	28.71	39.85	27.81	72.26	31.87
19	52.30	52.84	63.55	42.18	29.19	33.66	62.95	28.60	41.08	27.83	73.26	32.09
20	52.36	52.48	64.29	41.89	30.15	33.46	64.07	28.48	42.35	27.88	74.25	32.32
21	52.49	52.11	65.01	41.60	31.07	33.25	65.25	28.35	43.65	27.93	75.19	32.57
22	52.69	51.76	65.68	41.31	31.99	33.02	66.48	28.22	44.95	28.01	76.06	32.81
23	52.95	51.41	66.32	41.03	32.95	32.77	67.77	28.10	46.22	28.10	76.88	33.09
24	53.23	51.08	66.91	40.75	33.96	32.52	69.10	28.00	47.44	28.22	77.63	33.35
25	{ <sup>53.53</sup> <sup>53.76</sup> }	{ <sup>50.76</sup> <sup>50.46</sup> }	67.49	40.45	35.04	32.27	70.45	27.93	48.62	28.34	78.34	33.61
26	53.96	50.15	68.08	40.14	36.19	32.03	71.80	27.87	49.74	28.47	79.02	33.86
27	54.12	49.84	68.73	39.81	37.37	31.82	73.11	27.82	50.82	28.59	79.68	34.12
28	54.26	49.51	69.44	39.47	38.57	31.62	74.38	27.78	51.87	28.71	80.33	34.36
29	54.39	49.17	70.21	39.13	39.76	31.44	75.62	27.75	52.90	28.83	80.98	34.60
30	54.56	48.81	71.05	38.81	40.91	31.28	76.83	27.72	53.90	28.95	81.65	34.83
31	54.78	48.45	71.92	38.51	42.05	31.12	78.01	27.70	54.91	29.07	82.35	35.07
32	55.08	48.08	72.81	38.23			79.16	27.68			83.07	35.32

Mean R.A. 8<sup>h</sup> 20<sup>m</sup> 43<sup>s</sup>.867 Mean Dec. + 88° 52' 3".51 Sec δ 50.602 Tan δ + 50.592

# APPARENT PLACES OF STARS, 1922. 237

## AT UPPER TRANSIT AT GREENWICH.

6 B Ursæ Minoris. Mag. 6.3

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 12 14 88 7		<sup>h</sup> <sup>m</sup> 12 14 88 7		<sup>h</sup> <sup>m</sup> 12 14 88 7		<sup>h</sup> <sup>m</sup> 12 14 88 7		<sup>h</sup> <sup>m</sup> 12 14 88 8		<sup>h</sup> <sup>m</sup> 12 14 88 8	
1	15.79	34.67	35.89	37.19	48.13	43.91	50.82	53.72	42.54	2.12	26.18	7.00
2	16.52	34.68	36.41	37.40	48.37	44.23	50.67	54.01	42.14	2.32	25.63	7.09
3	17.23	34.70	36.92	37.60	48.58	44.54	50.53	54.30	41.77	2.53	25.03	7.19
4	17.93	34.72	37.40	37.80	48.78	44.84	50.41	54.57	41.40	2.74	24.40	7.28
5	18.59	34.75	37.88	37.98	48.95	45.13	50.31	54.85	41.01	2.97	23.72	7.36
6	19.24	34.78	38.36	38.16	49.15	45.40	50.23	55.15	40.60	3.21	23.02	7.42
7	19.86	34.81	38.86	38.33	49.37	45.68	50.14	55.46	40.13	3.45	22.32	7.46
8	20.48	34.83	39.38	38.50	49.61	45.96	50.03	55.77	39.62	3.69	21.63	7.48
9	21.10	34.85	39.93	38.67	49.87	46.24	49.87	56.11	39.07	3.90	20.97	7.48
10	21.73	34.85	40.49	38.87	50.14	46.54	49.65	56.44	38.50	4.10	20.34	7.48
11	22.40	34.85	41.06	39.08	50.38	46.85	49.38	56.76	37.93	4.28	19.73	7.47
12	23.09	34.87	41.61	39.32	50.59	47.18	49.08	57.07	37.37	4.43	19.15	7.47
13	23.82	34.89	42.11	39.58	50.74	47.52	48.77	57.36	36.83	4.58	18.57	7.48
14	24.57	34.93	42.57	39.85	50.85	47.87	48.46	57.63	36.32	4.72	18.00	7.49
15	25.31	35.00	42.98	40.11	50.92	48.21	48.16	57.89	35.82	4.87	17.40	7.51
16	26.02	35.09	43.36	40.37	50.96	48.53	47.88	58.15	35.34	5.03	16.80	7.53
17	26.70	35.20	43.72	40.62	50.98	48.84	47.62	58.42	34.86	5.19	16.17	7.54
18	27.33	35.32	44.07	40.85	51.00	49.14	47.37	58.68	34.37	5.37	15.52	7.55
19	27.92	35.43	44.42	41.09	51.04	49.43	47.12	58.96	33.86	5.54	14.85	7.56
20	28.49	35.54	44.80	41.32	51.11	49.72	46.87	59.24	33.32	5.72	14.16	7.55
21	29.06	35.64	45.21	41.56	51.18	50.02	46.60	59.53	32.75	5.89	13.46	7.53
22	29.64	35.73	45.63	41.81	51.26	50.33	46.29	59.82	32.16	6.05	12.76	7.48
23	30.24	35.82	46.04	42.07	51.33	50.66	45.95	60.12	31.54	6.20	12.07	7.41
24	30.86	35.92	46.45	42.36	51.38	50.99	45.58	60.41	30.91	6.33	11.41	7.33
25	31.50	36.03	46.84	42.65	51.41	51.34	45.19	60.70	30.27	6.45	10.79	7.23
26	32.15	36.15	47.21	42.95	51.42	51.70	44.77	60.98	29.62	6.55	10.19	7.14
27	32.81	36.29	47.55	43.27	51.40	52.05	44.32	61.24	28.99	6.63	9.63	7.05
28	33.47	36.45	47.86	43.59	51.35	52.40	43.87	61.48	28.38	6.70	9.07	6.98
29	34.11	36.62	48.13	43.91	51.26	52.74	43.41	61.70	27.80	6.77	8.51	6.91
30	34.73	36.80			51.14	53.08	42.96	61.91	27.26	6.83	7.92	6.85
31	35.33	36.99			50.98	53.41	42.54	62.12	26.72	6.91	7.30	6.79
32	35.89	37.19			50.82	53.72			26.18	7.00		

Mean R.A. 12<sup>h</sup> 14<sup>m</sup> 30<sup>s</sup>.387 Mean Dec. + 88° 7' 56".35 Sec δ 30.683 Tan δ + 30.667

# 238 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

6 B Ursæ Minoris. Mag. 6.3

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>
	12 13 88 8		12 13 88 7		12 13 88 7		12 13 88 7		12 13 88 7		12 13 88 7	
1	67.30	6.79	49.51	61.47	37.77	52.00	34.69	40.53	40.88	29.31	55.14	20.98
2	66.65	6.72	48.97	61.19	37.58	51.64	34.78	40.17	41.21	29.00	55.67	20.77
3	65.96	6.64	48.46	60.91	37.40	51.29	34.86	39.82	41.54	28.70	56.22	20.56
4	65.26	6.53	47.99	60.62	37.23	50.94	34.93	39.47	41.86	28.38	56.78	20.34
5	64.58	6.41	47.55	60.33	37.06	50.60	34.99	39.12	42.18	28.06	57.38	20.12
6	63.92	6.26	47.14	60.06	36.88	50.28	35.04	38.76	42.53	27.72	58.02	19.90
7	63.30	6.11	46.75	59.79	36.69	49.95	35.10	38.39	42.90	27.38	58.69	19.70
8	62.71	5.95	46.36	59.53	36.49	49.62	35.14	38.02	43.31	27.04	59.39	19.51
9	62.15	5.79	45.96	59.27	36.28	49.29	35.21	37.65	43.77	26.70	60.10	19.34
10	61.61	5.64	45.55	59.02	36.06	48.95	35.30	37.25	44.26	26.37	60.80	19.19
11	61.07	5.49	45.14	58.77	35.84	48.59	35.42	36.85	44.76	26.05	61.46	19.06
12	60.53	5.36	44.71	58.51	35.62	48.23	35.58	36.44	45.27	25.76	62.10	18.94
13	59.96	5.23	44.27	58.25	35.42	47.84	35.79	36.05	45.77	25.49	62.70	18.81
14	59.41	5.10	43.81	57.98	35.25	47.44	36.03	35.66	46.24	25.23	63.28	18.68
15	58.83	4.97	43.36	57.68	35.13	47.04	36.28	35.29	46.68	24.97	63.86	18.54
16	58.23	4.83	42.91	57.37	35.05	46.64	36.54	34.93	47.10	24.70	64.46	18.39
17	57.62	4.68	42.49	57.05	35.00	46.24	36.77	34.58	47.52	24.42	65.09	18.24
18	56.99	4.52	42.10	56.71	34.98	45.86	36.97	34.24	47.95	24.13	65.76	18.08
19	56.36	4.35	41.75	56.37	34.97	45.49	37.15	33.90	48.40	23.83	66.46	17.94
20	55.74	4.14	41.44	56.03	34.94	45.14	37.31	33.54	48.89	23.53	67.20	17.82
21	55.15	3.92	41.16	55.69	34.88	44.79	37.47	33.18	49.43	23.23	67.94	17.72
22	54.60	3.68	40.90	55.37	34.79	44.44	37.65	32.80	49.99	22.94	68.68	17.64
23	54.09	3.43	40.63	55.06	34.67	44.07	37.87	32.41	50.58	22.67	69.41	17.58
24	53.60	3.19	40.33	54.75	34.55	43.69	38.14	32.01	51.18	22.42	70.12	17.53
25	53.15	2.97	40.02	54.45	34.45	43.29	38.45	31.63	51.78	22.19	70.80	17.49
26	52.70	2.75	39.67	54.15	34.38	42.89	38.79	31.27	52.36	21.97	71.47	17.44
27	52.23	2.55	39.30	53.83	{ 34.36 }	{ 42.48 }	39.14	30.92	52.94	21.77	72.13	17.40
28	51.72	2.35	38.93	53.48	34.43	41.66	39.50	30.57	53.51	21.57	72.77	17.37
29	51.19	2.15	38.59	53.12	34.50	41.27	39.87	30.25	54.06	21.38	73.41	17.33
30	50.64	1.95	38.28	52.75	34.59	40.89	40.23	29.93	54.60	21.18	74.04	17.28
31	50.07	1.72	38.01	52.38	34.69	40.53	40.56	29.62	55.14	20.98	74.68	17.23
32	49.51	1.47	37.77	52.00			40.88	29.31			75.35	17.17

Mean R.A. 12<sup>h</sup> 14<sup>m</sup> 30<sup>s</sup>.387 Mean Dec. + 88° 7' 56".35 Sec δ 30.683 Tan δ + 30.667

# APPARENT PLACES OF STARS, 1922. 239

AT UPPER TRANSIT AT GREENWICH.

57 B Ursæ Minoris. Mag. 7.2

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 15 1 <sup>s</sup> 87 31	<sup>h</sup> <sup>m</sup> 15 1 <sup>s</sup> 87 31	<sup>h</sup> <sup>m</sup> 15 1 <sup>s</sup> 87 31	<sup>h</sup> <sup>m</sup> 15 1 <sup>s</sup> 87 31	<sup>h</sup> <sup>m</sup> 15 2 <sup>s</sup> 87 31	<sup>h</sup> <sup>m</sup> 15 2 <sup>s</sup> 87 31	<sup>h</sup> <sup>m</sup> 15 2 <sup>s</sup> 87 31	<sup>h</sup> <sup>m</sup> 15 2 <sup>s</sup> 87 31	<sup>h</sup> <sup>m</sup> 15 2 <sup>s</sup> 87 32	<sup>h</sup> <sup>m</sup> 15 2 <sup>s</sup> 87 32	<sup>h</sup> <sup>m</sup> 15 2 <sup>s</sup> 87 32	<sup>h</sup> <sup>m</sup> 15 2 <sup>s</sup> 87 32
1	34.59	49.36	48.81	44.72	2.81	45.76	14.49	52.24	18.51	1.29	14.31	10.37
2	35.02	49.12	49.33	44.70	3.28	45.93	14.71	52.51	18.50	1.57	14.09	10.63
3	35.45	48.90	49.83	44.68	3.72	46.10	14.93	52.77	18.49	1.85	13.86	10.91
4	35.87	48.70	50.31	44.67	4.13	46.26	15.16	53.02	18.51	2.13	13.59	11.19
5	36.29	48.51	50.78	44.65	4.54	46.42	15.40	53.26	18.52	2.44	13.29	11.47
6	36.69	48.33	51.24	44.62	4.95	46.56	15.65	53.51	18.53	2.75	12.96	11.75
7	37.08	48.15	51.71	44.58	5.36	46.69	15.91	53.77	18.51	3.09	12.60	12.01
8	37.47	47.97	52.19	44.54	5.79	46.82	16.18	54.05	18.46	3.43	12.24	12.26
9	37.84	47.78	52.69	44.49	6.23	46.95	16.42	54.35	18.37	3.78	11.88	12.49
10	38.22	47.57	53.22	44.45	6.68	47.09	16.64	54.66	18.26	4.12	11.52	12.70
11	38.61	47.35	53.77	44.44	7.14	47.24	16.83	54.99	18.13	4.44	11.18	12.90
12	39.03	47.13	54.34	44.45	7.60	47.41	16.99	55.32	17.98	4.74	10.85	13.10
13	39.47	46.91	54.88	44.48	8.04	47.61	17.12	55.64	17.83	5.03	10.53	13.29
14	39.94	46.71	55.41	44.53	8.45	47.83	17.23	55.95	17.70	5.31	10.22	13.50
15	40.43	46.52	55.92	44.59	8.84	48.07	17.33	56.25	17.58	5.58	9.90	13.72
16	40.94	46.35	56.40	44.66	9.20	48.31	17.44	56.54	17.47	5.86	9.58	13.94
17	41.44	46.21	56.86	44.73	9.53	48.53	17.57	56.83	17.37	6.14	9.25	14.16
18	41.93	46.09	57.31	44.80	9.86	48.75	17.70	57.11	17.26	6.43	8.89	14.38
19	42.40	45.99	57.76	44.85	10.19	48.96	17.83	57.40	17.14	6.73	8.50	14.60
20	42.84	45.89	58.23	44.90	10.53	49.16	17.98	57.70	17.01	7.05	8.10	14.82
21	43.27	45.78	58.72	44.95	10.89	49.36	18.12	58.01	16.87	7.37	7.67	15.03
22	43.70	45.67	59.22	45.01	11.25	49.56	18.24	58.33	16.71	7.68	7.23	15.22
23	44.14	45.54	59.73	45.08	11.63	49.77	18.36	58.65	16.52	8.00	6.78	15.40
24	44.61	45.40	60.26	45.16	12.01	50.00	18.45	58.99	16.30	8.31	6.33	15.55
25	45.09	45.27	60.78	45.25	12.39	50.26	18.52	59.32	16.06	8.63	5.89	15.69
26	45.59	45.15	61.30	45.35	12.75	50.52	18.57	59.67	15.80	8.92	5.46	15.82
27	46.12	45.04	61.82	45.47	13.10	50.80	18.59	60.02	15.53	9.19	5.05	15.95
28	46.66	44.95	62.32	45.61	13.42	51.08	18.59	60.36	15.26	9.44	4.66	16.08
29	47.21	44.87	62.81	45.76	13.73	51.37	18.56	60.68	15.00	9.67	4.26	16.22
30	47.75	44.80			14.01	51.66	18.54	60.99	14.76	9.89	3.86	16.38
31	48.29	44.75			14.26	51.96	18.51	61.29	14.52	10.13	3.43	16.55
32	48.81	44.72			14.49	52.24			14.31	10.37		

Mean R.A. 15<sup>h</sup> 2<sup>m</sup> 5<sup>s</sup>.004 Mean Dec. + 87° 32' 0".69 Sec δ 23.237 Tan δ + 23.215

## 240 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

57 B Ursæ Minoris. Mag. 7.2

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>	<sup>h</sup> <sub>s</sub> <sup>m</sup> <sub>s</sub>
	15 1	87 32	15 1	87 32	15 1	87 32	15 1	87 31	15 1	87 31	15 1	87 31
1	63.43	16.55	47.85	18.53	31.45	15.44	18.18	68.25	10.05	57.93	9.62	46.73
2	62.99	16.72	47.27	18.51	30.96	15.23	17.86	67.95	9.92	57.60	9.72	46.41
3	62.52	16.88	46.70	18.47	30.48	15.02	17.55	67.66	9.80	57.27	9.82	46.07
4	62.02	17.02	46.15	18.42	30.03	14.82	17.23	67.37	9.66	56.93	9.93	45.71
5	61.51	17.15	45.61	18.35	29.58	14.64	16.91	67.09	9.52	56.58	10.05	45.35
6	60.99	17.27	45.10	18.28	29.14	14.45	16.58	66.81	9.37	56.23	10.21	44.98
7	60.48	17.36	44.60	18.21	28.70	14.26	16.24	66.53	9.22	55.87	10.40	44.60
8	59.99	17.44	44.10	18.14	28.24	14.08	15.90	66.24	9.08	55.49	10.60	44.24
9	59.52	17.51	43.61	18.08	27.76	13.90	15.54	65.94	8.98	55.10	10.83	43.89
10	59.07	17.59	43.11	18.02	27.29	13.72	15.18	65.64	{8.89}	{54.70}	11.08	43.56
11	58.61	17.67	42.62	17.97	26.80	13.53	14.83	65.32	8.80	53.89	11.34	43.24
12	58.16	17.76	42.10	17.92	26.31	13.33	14.49	64.98	8.80	53.51	11.58	42.95
13	57.71	17.84	41.57	17.87	25.81	13.11	14.18	64.62	8.81	53.14	11.80	42.65
14	57.25	17.93	41.03	17.82	25.31	12.87	13.90	64.25	8.82	52.79	12.00	42.36
15	56.78	18.02	40.47	17.77	24.83	12.62	13.63	63.89	8.80	52.45	12.19	42.06
16	56.29	18.12	39.90	17.69	24.37	12.35	13.39	63.54	8.77	52.11	12.39	41.75
17	55.78	18.21	39.33	17.59	23.93	12.07	13.17	63.19	8.73	51.77	12.60	41.42
18	55.25	18.30	38.76	17.47	23.52	11.79	12.95	62.86	8.68	51.42	12.84	41.10
19	54.71	18.37	38.21	17.33	23.12	11.52	12.72	62.55	8.63	51.05	13.11	40.77
20	54.15	18.43	37.67	17.18	22.73	11.27	12.46	62.24	8.60	50.66	13.41	40.45
21	53.59	18.46	37.16	17.03	22.33	11.02	12.19	61.92	8.61	50.28	13.74	40.13
22	53.04	18.47	36.68	16.88	21.92	10.79	11.91	61.60	8.65	49.88	14.08	39.83
23	52.51	18.47	36.20	16.74	21.49	10.56	11.62	61.25	8.72	49.49	14.44	39.55
24	52.00	18.45	35.72	16.61	21.04	10.31	11.35	60.88	8.82	49.11	14.79	39.28
25	51.50	18.43	35.22	16.49	20.58	10.06	11.11	60.51	8.94	48.74	15.14	39.02
26	51.01	18.42	34.70	16.38	20.13	9.79	10.90	60.12	9.05	48.39	15.49	38.77
27	50.53	18.43	34.17	16.26	19.69	9.49	10.71	59.73	9.18	48.05	15.83	38.53
28	50.04	18.44	33.62	16.14	19.28	9.18	10.55	59.35	9.29	47.71	16.17	38.30
29	49.52	18.47	33.06	15.99	18.88	8.87	10.41	58.97	9.41	47.37	16.49	38.06
30	48.98	18.50	32.50	15.82	18.51	8.56	10.29	58.61	9.52	47.05	16.81	37.82
31	48.43	18.52	31.96	15.63	18.18	8.25	10.17	58.27	9.62	46.73	17.13	37.57
32	47.85	18.53	31.45	15.44			10.05	57.93			17.47	37.31

Mean R.A. 15<sup>h</sup> 2<sup>m</sup> 5<sup>s</sup>.004 Mean Dec. + 87° 32' 0".69 Sec δ 23.237 Tan δ + 23.215

# APPARENT PLACES OF STARS, 1922. 241

## AT UPPER TRANSIT AT GREENWICH.

ε Ursæ Minoris. Mag. 4.4

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	h m	s	h m	s	h m	s	h m	s	h m	s	h m	s
	16 53	82 9	16 53	82 9	16 53	82 9	16 53	82 9	16 53	82 10	16 53	82 10
1	43.44	63.57	46.59	54.90	50.89	51.46	55.75	53.64	59.06	0.62	60.14	10.27
2	43.51	63.22	46.73	54.72	51.05	51.46	55.88	53.82	59.13	0.88	60.14	10.57
3	43.58	62.88	46.87	54.55	51.22	51.47	56.01	53.99	59.20	1.14	60.13	10.90
4	43.66	62.56	47.01	54.39	51.38	51.48	56.13	54.15	59.27	1.40	60.12	11.24
5	43.74	62.25	47.14	54.23	51.54	51.49	56.26	54.29	59.35	1.67	60.10	11.60
6	43.81	61.95	47.27	54.06	51.69	51.50	56.39	54.44	59.43	1.96	60.08	11.95
7	43.88	61.66	47.41	53.88	51.84	51.49	56.53	54.60	59.50	2.26	60.05	12.30
8	43.96	61.38	47.54	53.69	51.99	51.47	56.67	54.78	59.56	2.59	60.02	12.64
9	44.03	61.09	47.68	53.50	52.16	51.45	56.81	54.98	59.62	2.93	59.98	12.97
10	44.10	60.79	47.83	53.30	52.32	51.42	56.95	55.20	59.67	3.28	59.94	13.28
11	44.18	60.47	47.98	53.12	52.49	51.42	57.08	55.43	59.71	3.61	59.89	13.56
12	44.26	60.14	48.14	52.94	52.66	51.45	57.20	55.68	59.74	3.93	59.85	13.85
13	44.35	59.81	48.30	52.79	52.83	51.50	57.31	55.94	59.78	4.24	59.81	14.14
14	44.44	59.48	48.46	52.66	53.00	51.57	57.42	56.19	59.81	4.55	59.78	14.43
15	44.54	59.16	48.63	52.56	53.16	51.66	57.53	56.43	59.85	4.85	59.74	14.72
16	44.65	58.85	48.78	52.48	53.31	51.76	57.63	56.65	59.89	5.14	59.70	15.02
17	44.76	58.57	48.93	52.39	53.46	51.86	57.73	56.87	59.94	5.43	59.66	15.33
18	44.88	58.31	49.08	52.30	53.61	51.95	57.84	57.08	59.98	5.73	59.62	15.66
19	44.99	58.06	49.23	52.21	53.76	52.03	57.95	57.31	60.02	6.04	59.57	15.98
20	45.10	57.83	49.38	52.12	53.90	52.11	58.06	57.54	60.06	6.36	59.51	16.31
21	45.20	57.59	49.53	52.01	54.06	52.18	58.17	57.77	60.10	6.69	59.45	16.64
22	45.31	57.35	49.69	51.90	54.21	52.25	58.28	58.02	60.13	7.04	59.38	16.96
23	45.41	57.10	49.85	51.80	54.37	52.34	58.39	58.28	60.15	7.38	59.30	17.27
24	45.52	56.84	50.02	51.71	54.53	52.43	58.49	58.56	60.16	7.73	59.22	17.56
25	45.63	56.58	50.19	51.63	54.70	52.54	58.59	58.85	60.16	8.08	59.14	17.83
26	45.75	56.31	50.36	51.56	54.87	52.65	58.68	59.14	60.16	8.44	59.06	18.09
27	45.87	56.04	50.54	51.51	55.03	52.78	58.77	59.44	60.16	8.77	58.98	18.33
28	46.01	55.79	50.71	51.48	55.19	52.93	58.84	59.75	60.15	9.09	58.90	18.57
29	46.15	55.55	50.89	51.46	55.33	53.10	58.92	60.05	60.14	9.39	58.83	18.83
30	46.30	55.32			55.48	53.28	58.99	60.34	60.14	9.69	58.76	19.10
31	46.44	55.10			55.62	53.46	59.06	60.62	60.14	9.98	58.68	19.38
32	46.59	54.90			55.75	53.64			60.14	10.27		

Mean R.A. 16<sup>h</sup> 53<sup>m</sup> 54<sup>s</sup>.271 Mean Dec. + 82° 10' 4".35 Sec δ 7.338 Tan δ + 7.270

## 242 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

ε Ursæ Minoris. Mag. 4.4

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>
	16 53	82 10	16 53	82 10	16 53	82 10	16 53	82 10	16 53	82 10	16 53	82 9
1	58.68	19.38	54.97	26.25	49.82	28.74	44.57	26.52	40.07	19.82	37.63	70.21
2	58.60	19.68	54.81	26.41	49.64	28.72	44.41	26.35	39.96	19.55	37.59	69.88
3	58.51	19.99	54.64	26.56	49.46	28.69	44.26	26.19	39.85	19.30	37.55	69.56
4	58.41	20.29	54.48	26.69	49.30	28.65	44.11	26.04	39.74	19.04	37.51	69.22
5	58.30	20.58	54.33	26.81	49.13	28.62	43.96	25.89	39.63	18.78	37.47	68.87
6	58.19	20.85	54.17	26.91	48.97	28.59	43.81	25.74	39.51	18.51	37.43	68.50
7	58.08	21.09	54.03	27.01	48.80	28.58	43.65	25.59	39.39	18.23	{37.40}	{68.13}
8	57.97	21.32	53.88	27.11	48.63	28.56	43.49	25.43	39.28	17.93	37.36	67.74
9	57.86	21.55	53.73	27.22	48.46	28.55	43.33	25.28	39.17	17.61	37.35	66.95
10	57.76	21.77	53.58	27.33	48.28	28.54	43.16	25.12	39.06	17.27	37.35	66.57
11	57.66	21.98	53.42	27.45	48.11	28.53	42.99	24.94	38.96	16.93	37.35	66.21
12	57.56	22.20	53.28	27.57	47.92	28.51	42.82	24.74	38.88	16.59	37.36	65.86
13	57.46	22.43	53.12	27.69	47.73	28.47	42.66	24.52	38.79	16.25	37.36	65.53
14	57.36	22.66	52.96	27.82	47.54	28.41	42.50	24.29	38.71	15.92	37.36	65.20
15	57.25	22.90	52.80	27.94	47.36	28.33	42.35	24.05	38.63	15.61	37.35	64.87
16	57.14	23.14	52.62	28.05	47.17	28.23	42.21	23.81	38.54	15.30	37.35	64.53
17	57.02	23.39	52.44	28.14	47.00	28.13	42.07	23.57	38.46	15.00	37.35	64.18
18	56.90	23.64	52.26	28.21	46.82	28.02	41.93	23.34	38.38	14.72	37.36	63.81
19	56.76	23.87	52.08	28.27	46.66	27.91	41.80	23.12	38.30	14.41	37.37	63.42
20	56.62	24.10	51.90	28.31	46.49	27.80	41.65	22.92	38.21	14.08	37.39	63.04
21	56.48	24.31	51.73	28.33	46.33	27.70	41.51	22.73	38.13	13.74	37.41	62.65
22	56.34	24.50	51.57	28.35	46.16	27.62	41.36	22.52	38.06	13.37	37.45	62.28
23	56.20	24.66	51.41	28.38	45.99	27.54	41.21	22.30	37.99	13.00	37.49	61.90
24	56.07	24.81	51.25	28.43	45.80	27.47	41.05	22.05	37.93	12.64	37.53	61.55
25	55.93	24.97	51.09	28.48	45.62	27.39	40.91	21.79	37.88	12.28	37.57	61.21
26	55.80	25.12	50.92	28.54	45.43	27.28	40.78	21.52	37.83	11.91	37.62	60.88
27	55.67	25.29	50.75	28.60	45.25	27.16	40.65	21.23	37.78	11.55	37.66	60.55
28	55.54	25.47	50.56	28.66	45.08	27.02	40.52	20.94	37.74	11.20	37.71	60.22
29	55.41	25.66	50.38	28.71	44.91	26.86	40.41	20.65	37.70	10.87	37.76	59.90
30	55.27	25.85	50.19	28.74	44.74	26.69	40.29	20.37	37.67	10.54	37.81	59.59
31	55.12	26.06	50.01	28.75	44.57	26.52	40.18	20.10	37.63	10.21	37.85	59.27
32	54.97	26.25	49.82	28.74			40.07	19.82			37.90	58.93

Mean R.A. 16<sup>h</sup> 53<sup>m</sup> 54<sup>s</sup>.271 Mean Dec. + 82° 10' 4".35 Sec δ 7.338 Tan δ + 7.270



# APPARENT PLACES OF STARS, 1922. 243

AT UPPER TRANSIT AT GREENWICH.

δ Ursæ Minoris. Mag. 4.4

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 17 56	<sup>h</sup> <sup>m</sup> 86 36	<sup>h</sup> <sup>m</sup> 17 57	<sup>h</sup> <sup>m</sup> 86 36	<sup>h</sup> <sup>m</sup> 17 57	<sup>h</sup> <sup>m</sup> 86 36	<sup>h</sup> <sup>m</sup> 17 57	<sup>h</sup> <sup>m</sup> 86 36	<sup>h</sup> <sup>m</sup> 17 57	<sup>h</sup> <sup>m</sup> 86 36	<sup>h</sup> <sup>m</sup> 17 57	<sup>h</sup> <sup>m</sup> 86 36
1	59.16	56.12	3.29	46.43	11.65	40.97	22.94	40.52	32.14	45.40	37.04	54.05
2	59.20	55.74	3.55	46.19	12.02	40.89	23.27	40.62	32.36	45.61	37.12	54.34
3	59.26	55.40	3.81	45.95	12.38	40.81	23.59	40.71	32.58	45.82	37.21	54.65
4	59.33	55.05	4.07	45.73	12.74	40.74	23.91	40.79	32.81	46.03	37.29	54.98
5	59.41	54.73	4.31	45.51	13.08	40.68	24.23	40.86	33.05	46.25	37.35	55.33
6	59.48	54.42	4.53	45.28	13.41	40.60	24.56	40.93	33.31	46.48	37.39	55.68
7	59.55	54.11	4.76	45.05	13.74	40.52	24.90	41.00	33.56	46.73	37.41	56.03
8	59.62	53.81	4.99	44.81	14.07	40.42	25.26	41.09	33.79	47.00	37.40	56.38
9	59.68	53.52	5.23	44.56	14.40	40.32	25.63	41.21	34.01	47.29	37.39	56.71
10	59.73	53.21	5.49	44.30	14.75	40.22	25.99	41.35	34.21	47.60	37.37	57.04
11	59.78	52.88	5.77	44.04	15.12	40.14	26.34	41.50	34.39	47.90	37.35	57.34
12	59.84	52.53	6.07	43.80	15.51	40.07	26.68	41.68	34.55	48.20	37.33	57.64
13	59.92	52.17	6.39	43.58	15.91	40.01	26.99	41.87	34.70	48.48	37.32	57.93
14	60.02	51.82	6.72	43.37	16.31	39.98	27.29	42.04	34.86	48.76	37.31	58.23
15	60.15	51.47	7.04	43.19	16.69	39.97	27.58	42.22	35.01	49.02	37.31	58.53
16	60.30	51.13	7.35	43.03	17.05	39.99	27.87	42.38	35.17	49.28	37.31	58.84
17	60.46	50.80	7.66	42.88	17.41	40.01	28.15	42.52	35.33	49.54	37.31	59.15
18	60.63	50.50	7.95	42.72	17.75	40.02	28.45	42.68	35.51	49.81	37.30	59.49
19	60.80	50.22	8.24	42.56	18.09	40.03	28.75	42.83	35.68	50.08	37.27	59.83
20	60.95	49.94	8.53	42.39	18.44	40.02	29.06	42.99	35.85	50.36	37.23	60.17
21	61.10	49.68	8.83	42.22	18.79	40.00	29.38	43.16	36.02	50.65	37.18	60.52
22	61.24	49.40	9.15	42.04	19.15	40.00	29.70	43.34	36.18	50.96	37.10	60.87
23	61.39	49.10	9.47	41.85	19.52	39.99	30.02	43.53	36.32	51.28	37.00	61.21
24	61.54	48.80	9.81	41.67	19.90	40.00	30.33	43.74	36.45	51.60	36.89	61.54
25	61.71	48.48	10.17	41.50	20.29	40.01	30.63	43.95	36.56	51.93	36.76	61.84
26	61.89	48.17	10.53	41.35	20.69	40.04	30.92	44.18	36.66	52.27	36.64	62.13
27	62.09	47.86	10.90	41.21	21.08	40.07	31.20	44.43	36.73	52.60	36.53	62.41
28	62.31	47.55	11.27	41.08	21.47	40.13	31.46	44.68	36.78	52.91	36.42	62.69
29	62.54	47.25	11.65	40.97	21.85	40.21	31.70	44.93	36.84	53.21	36.32	62.97
30	62.78	46.95			22.23	40.31	31.92	45.17	36.90	53.49	36.23	63.27
31	63.03	46.68			22.59	40.41	32.14	45.40	36.96	53.76	36.14	63.58
32	63.29	46.43			22.94	40.52			37.04	54.05		

Mean R.A. 17<sup>h</sup> 57<sup>m</sup> 25.820 Mean Dec. + 86° 36' 50".63 Sec δ 16.932 Tan δ + 16.902

R 2

## 244 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

δ Ursæ Minoris. Mag. 4.4

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>	
	17 57	86 37	17 57	86 37	17 57	86 37	17 56	86 37	17 56	86 37	17 56	86 36
1	36.14	3.58	29.50	12.21	18.46	17.42	65.92	18.25	53.67	14.49	45.12	66.90
2	36.04	3.91	29.18	12.46	18.05	17.51	65.52	18.18	53.35	14.30	44.93	66.62
3	35.91	4.25	28.85	12.69	17.65	17.58	65.12	18.11	53.03	14.11	44.73	66.34
4	35.77	4.59	28.52	12.90	17.26	17.64	64.73	18.05	52.70	13.93	44.52	66.05
5	35.60	4.92	28.19	13.09	16.87	17.69	64.34	18.00	52.36	13.75	44.31	65.76
6	35.41	5.24	27.86	13.27	16.49	17.76	63.95	17.94	52.01	13.56	44.10	65.45
7	35.22	5.54	27.54	13.45	16.11	17.84	63.55	17.89	51.65	13.36	43.90	65.12
8	35.04	5.83	27.24	13.63	15.73	17.92	63.14	17.83	51.29	13.15	43.72	64.77
9	34.85	6.11	26.94	13.81	15.34	18.00	62.72	17.78	50.93	12.92	43.55	64.41
10	34.66	6.37	26.64	14.00	14.95	18.08	62.30	17.73	50.59	12.67	43.41	64.04
11	34.49	6.63	26.33	14.19	14.55	18.16	61.87	17.66	50.25	12.41	43.30	63.70
12	34.32	6.90	26.02	14.39	14.12	18.24	61.43	17.56	49.94	12.13	43.19	63.37
13	34.14	7.17	25.70	14.60	13.68	18.31	60.99	17.45	49.65	11.86	43.09	63.05
14	33.97	7.45	25.38	14.80	13.24	18.36	60.55	17.31	49.38	11.59	42.99	62.73
15	33.79	7.74	25.03	15.01	12.79	18.40	60.13	17.16	49.11	11.34	42.88	62.44
16	33.61	8.03	24.67	15.22	12.34	18.41	59.74	17.01	48.84	11.11	42.76	62.14
17	33.42	8.33	24.29	15.41	11.90	18.41	59.36	16.86	48.55	10.89	42.63	61.82
18	33.21	8.63	23.90	15.57	11.46	18.39	58.99	16.72	48.26	10.67	42.51	61.49
19	32.98	8.93	23.50	15.72	11.05	18.38	58.62	16.60	47.95	10.43	42.39	61.15
20	32.73	9.22	23.10	15.85	10.65	18.38	58.25	16.50	47.65	10.18	42.29	60.79
21	32.46	9.50	22.71	15.98	10.25	18.39	57.85	16.40	47.35	9.90	{ 42.20 42.12 }	{ 60.43 60.35 }
22	32.18	9.77	22.34	16.09	9.85	18.40	57.44	16.28	47.07	9.61	42.07	59.68
23	31.90	10.01	21.99	16.21	9.44	18.43	57.03	16.16	46.80	9.31	42.05	59.32
24	31.62	10.24	21.64	16.34	9.02	18.46	56.62	16.02	46.54	9.00	42.04	58.97
25	31.35	10.45	21.29	16.49	8.58	18.47	56.20	15.86	46.31	8.68	42.04	58.61
26	31.10	10.67	20.93	16.64	8.13	18.48	55.79	15.69	46.09	8.37	42.04	58.27
27	30.85	10.90	20.55	16.80	7.67	18.47	55.41	15.49	45.88	8.06	42.04	57.94
28	30.61	11.15	20.15	16.96	7.22	18.44	55.04	15.28	45.68	7.77	42.05	57.62
29	30.36	11.40	19.74	17.11	6.77	18.39	54.68	15.07	45.49	7.47	42.05	57.30
30	30.09	11.67	19.32	17.24	6.33	18.33	54.33	14.87	45.31	7.18	42.04	56.98
31	29.80	11.95	18.89	17.34	5.92	18.25	54.00	14.68	45.12	6.90	42.02	56.66
32	29.50	12.21	18.46	17.42			53.67	14.49			42.00	56.33

Mean R.A. 17<sup>h</sup> 57<sup>m</sup> 23<sup>s</sup>.820 Mean Dec. + 86° 36' 50".63 Sec δ 16.932 Tan δ + 16.902

# APPARENT PLACES OF STARS, 1922. 245

AT UPPER TRANSIT AT GREENWICH.

$\lambda$  Ursæ Minoris. Mag. 6.6

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>
	18 55	89	18 55	89	18 55	89	18 56	89	18 56	89	18 57	89
	<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>	
1	18.82	39.30	22.50	28.85	44.86	21.83	21.87	18.89	56.98	21.50	21.24	28.69
2	18.56	38.93	23.13	28.56	46.02	21.67	23.05	18.91	57.88	21.66	21.79	28.95
3	{18.31}	{38.55}	23.76	28.28	47.16	21.51	24.18	18.92	58.81	21.81	22.38	29.23
4	18.10	37.92	24.36	28.01	48.25	21.36	25.30	18.93	59.78	21.95	22.95	29.52
5	18.02	37.59	24.94	27.75	49.30	21.22	26.42	18.93	60.79	22.11	23.49	29.84
6	17.97	37.27	25.48	27.48	50.30	21.08	27.59	18.92	61.85	22.28	23.95	30.16
7	17.91	36.96	25.99	27.21	51.28	20.93	28.82	18.92	62.93	22.48	24.33	30.50
8	17.81	36.66	26.49	26.94	52.27	20.77	30.10	18.93	64.00	22.69	24.64	30.83
9	17.67	36.36	27.01	26.65	53.28	20.59	31.44	18.95	65.01	22.92	24.88	31.16
10	17.50	36.06	27.59	26.34	54.35	20.41	32.79	19.00	65.95	23.17	25.08	31.48
11	17.32	35.74	28.27	26.03	55.51	20.25	34.12	19.08	66.81	23.41	25.28	31.78
12	17.15	35.40	29.04	25.73	56.75	20.10	35.39	19.17	67.61	23.65	25.49	32.07
13	17.03	35.05	29.90	25.45	58.03	19.97	36.61	19.28	68.36	23.88	25.72	32.35
14	17.00	34.68	30.79	25.19	59.33	19.86	37.76	19.38	69.11	24.10	25.98	32.63
15	17.06	34.31	31.70	24.95	60.61	19.78	38.86	19.48	69.86	24.32	26.26	32.92
16	17.22	33.95	32.59	24.73	61.84	19.70	39.95	19.57	70.63	24.53	26.55	33.21
17	17.45	33.61	33.44	24.51	63.03	19.63	41.04	19.65	71.42	24.74	26.83	33.52
18	17.71	33.28	34.25	24.30	64.17	19.56	42.16	19.73	72.23	24.95	27.09	33.84
19	17.98	32.97	35.05	24.09	65.29	19.49	43.31	19.80	73.06	25.18	27.33	34.17
20	18.24	32.68	35.84	23.86	66.41	19.42	44.49	19.88	73.91	25.41	27.52	34.51
21	18.46	32.39	36.65	23.62	67.55	19.34	45.69	19.97	74.75	25.66	27.64	34.86
22	18.66	32.10	37.51	23.37	68.73	19.24	46.92	20.07	75.58	25.92	27.69	35.21
23	18.84	31.80	38.41	23.13	69.96	19.15	48.17	20.19	76.37	26.19	27.66	35.56
24	19.03	31.49	39.37	22.88	71.24	19.06	49.42	20.31	77.11	26.47	27.57	35.89
25	19.26	31.16	40.39	22.64	72.55	18.99	50.65	20.46	77.78	26.77	27.43	36.21
26	19.54	30.83	41.46	22.42	73.89	18.94	51.85	20.62	78.39	27.07	27.28	36.52
27	19.89	30.49	42.57	22.21	75.25	18.89	53.00	20.80	78.92	27.37	27.13	36.83
28	20.31	30.15	43.70	22.01	76.62	18.86	54.09	20.98	79.38	27.66	27.03	37.11
29	20.78	29.81	44.86	21.83	77.99	18.85	55.11	21.15	79.82	27.93	26.97	37.40
30	21.31	29.48			79.33	18.85	56.06	21.33	80.26	28.19	26.95	37.70
31	21.89	29.16			80.63	18.87	56.98	21.50	80.73	28.44	26.93	38.03
32	22.50	28.85			81.87	18.89			81.24	28.69		

Mean R.A. 18<sup>h</sup> 56<sup>m</sup> 36<sup>s</sup>.628 Mean Dec. + 89° 1' 27".98 Sec  $\delta$  58.735 Tan  $\delta$  + 58.726

## 246 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

 $\lambda$  Ursæ Minoris. Mag. 6.6

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 18 57 <sup>s</sup> 89 <sup>°</sup>		<sup>h</sup> <sup>m</sup> 18 56 <sup>s</sup> 89 <sup>°</sup>		<sup>h</sup> <sup>m</sup> 18 55 <sup>s</sup> 89 <sup>°</sup>		<sup>h</sup> <sup>m</sup> 18 55 <sup>s</sup> 89 <sup>°</sup>		<sup>h</sup> <sup>m</sup> 18 54 <sup>s</sup> 89 <sup>°</sup>		<sup>h</sup> <sup>m</sup> 18 54 <sup>s</sup> 89 <sup>°</sup>	
1	26.93	38.03	72.44	47.78	99.85	55.29	57.93	58.93	72.50	58.11	35.67	52.84
2	26.89	38.37	71.57	48.09	98.51	55.46	56.49	58.95	71.20	58.01	34.73	52.61
3	26.79	38.72	70.66	48.38	97.21	55.61	55.07	58.97	69.90	57.90	33.77	52.38
4	26.61	39.09	69.72	48.66	95.94	55.76	53.69	59.00	68.61	57.80	32.78	52.16
5	26.35	39.44	68.77	48.93	94.69	55.90	52.32	59.02	67.28	57.71	31.76	51.93
6	26.02	39.79	67.85	49.18	93.47	56.05	50.94	59.06	65.91	57.61	30.71	51.68
7	25.64	40.12	66.95	49.43	92.26	56.22	49.54	59.10	64.50	57.50	29.67	51.41
8	25.24	40.43	66.07	49.67	91.05	56.37	48.13	59.14	63.06	57.39	28.68	51.11
9	24.85	40.73	65.22	49.92	89.82	56.54	46.66	59.19	61.60	57.25	27.76	50.81
10	24.47	41.03	64.38	50.16	88.56	56.71	45.14	59.23	60.14	57.08	26.93	50.49
11	24.12	41.32	63.54	50.41	87.26	56.89	43.58	59.27	58.73	56.90	26.18	50.18
12	23.80	41.61	62.69	50.68	85.90	57.06	41.97	59.28	57.39	56.71	25.49	49.89
13	23.47	41.90	61.82	50.94	84.49	57.22	40.36	59.27	56.12	56.51	24.83	49.62
14	23.15	42.21	60.90	51.21	83.02	57.38	38.75	59.24	54.93	56.33	24.19	49.36
15	22.82	42.53	59.92	51.49	81.50	57.52	37.18	59.20	53.77	56.15	23.51	49.11
16	22.51	42.86	58.87	51.77	79.97	57.64	35.67	59.14	52.62	55.99	22.78	48.85
17	22.13	43.19	57.75	52.05	78.45	57.73	34.22	59.09	51.45	55.84	22.00	48.58
18	21.69	43.52	56.57	52.30	76.98	57.81	32.84	59.05	50.23	55.70	21.21	48.29
19	21.18	43.86	55.36	52.53	75.56	57.88	31.46	59.02	48.98	55.54	20.44	47.99
20	20.60	44.20	54.14	52.74	74.20	57.97	30.08	59.00	47.68	55.37	19.71	47.66
21	19.94	44.53	52.94	52.94	72.86	58.07	28.68	58.99	46.36	55.18	19.04	47.33
22	19.23	44.85	51.78	53.13	71.52	58.18	27.16	58.98	45.06	54.98	18.44	46.99
23	18.49	45.14	50.67	53.32	70.15	58.29	25.61	58.96	43.80	54.75	17.92	46.65
24	17.75	45.42	49.61	53.53	68.73	58.41	24.04	58.92	42.61	54.51	17.47	46.32
25	17.04	45.69	48.56	53.75	67.24	58.54	22.46	58.85	41.49	54.26	17.07	45.99
26	16.38	45.96	47.48	53.98	65.69	58.65	20.90	58.77	40.43	54.01	16.72	45.66
27	15.76	46.23	46.36	54.22	64.11	58.75	19.37	58.67	39.40	53.77	16.38	45.34
28	15.16	46.52	45.17	54.45	62.52	58.82	17.90	58.56	38.46	53.53	16.06	45.04
29	14.56	46.82	43.90	54.68	60.94	58.88	16.48	58.44	37.53	53.30	15.74	44.75
30	13.92	47.13	42.57	54.91	59.41	58.91	15.12	58.33	36.60	53.07	15.40	44.45
31	13.22	47.45	41.22	55.11	57.93	58.93	13.80	58.22	35.67	52.84	15.04	44.16
32	12.44	47.78	39.85	55.29			12.50	58.11			14.64	43.85

Mean R.A. 18<sup>h</sup> 36<sup>m</sup> 36<sup>s</sup>.628 Mean Dec. + 89° 1' 27".98 Sec  $\delta$  58.735 Tan  $\delta$  + 58.726

# APPARENT PLACES OF STARS, 1922. 247

AT UPPER TRANSIT AT GREENWICH.

B.A.C. 7504. Mag. 7.4

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h m</sup> 21 14	<sup>s</sup> 86 43	<sup>h m</sup> 21 14	<sup>s</sup> 86 43	<sup>h m</sup> 21 14	<sup>s</sup> 86 42	<sup>h m</sup> 21 15	<sup>s</sup> 86 42	<sup>h m</sup> 21 15	<sup>s</sup> 86 42	<sup>h m</sup> 21 15	<sup>s</sup> 86 42
1	62.77	20.68	57.03	11.78	57.95	62.37	5.19	54.60	15.65	51.76	26.50	54.37
2	62.48	20.42	56.98	11.45	58.12	62.06	5.50	54.45	15.99	51.77	26.82	54.51
3	62.21	20.16	56.94	11.12	58.30	61.77	5.80	54.30	16.32	51.76	27.14	54.67
4	61.95	19.90	56.92	10.80	58.48	61.49	6.09	54.14	16.66	51.75	27.48	54.84
5	61.71	19.64	<sup>(56.89)</sup>	<sup>(10.49)</sup>	58.65	61.22	6.37	53.98	17.02	51.74	27.82	55.03
6	61.48	19.37	56.83	9.90	58.81	60.95	6.66	53.81	17.39	51.74	28.16	55.24
7	61.26	19.12	56.78	9.60	58.95	60.68	6.96	53.64	17.78	51.75	28.48	55.47
8	61.04	18.87	56.73	9.28	59.09	60.41	7.28	53.46	18.18	51.77	28.79	55.70
9	60.83	18.64	56.68	8.95	59.23	60.13	7.62	53.30	18.59	51.82	29.07	55.93
10	60.61	18.41	56.64	8.61	59.38	59.83	7.99	53.15	18.99	51.88	29.33	56.16
11	60.37	18.17	56.60	8.26	59.56	59.52	8.36	53.02	19.37	51.96	29.58	56.39
12	60.12	17.93	56.59	7.90	59.77	59.21	8.73	52.90	19.73	52.05	29.83	56.61
13	59.87	17.67	56.60	7.54	60.00	58.92	9.11	52.81	20.08	52.14	30.08	56.83
14	59.62	17.39	56.64	7.20	60.25	58.65	9.47	52.73	20.42	52.22	30.33	57.03
15	59.38	17.09	56.71	6.87	60.50	58.39	9.81	52.64	20.75	52.30	30.59	57.24
16	59.16	16.78	56.79	6.56	60.76	58.15	10.15	52.56	21.08	52.37	30.86	57.45
17	58.97	16.46	56.87	6.26	61.01	57.92	10.48	52.48	21.42	52.44	31.14	57.67
18	58.80	16.15	56.95	5.96	61.26	57.70	10.81	52.39	21.76	52.50	31.41	57.90
19	58.66	15.85	57.01	5.67	61.49	57.47	11.14	52.30	22.12	52.58	31.69	58.14
20	58.53	15.56	57.06	5.36	61.71	57.24	11.48	52.19	22.48	52.66	31.97	58.40
21	58.40	15.28	57.10	5.05	61.94	57.01	11.84	52.09	22.85	52.75	32.24	58.68
22	58.27	15.01	57.15	4.72	62.17	56.77	12.22	52.00	23.23	52.85	32.50	58.96
23	58.13	14.73	57.22	4.38	62.42	56.52	12.59	51.92	23.61	52.96	32.73	59.26
24	57.98	14.43	57.30	4.04	62.68	56.27	12.98	51.85	23.98	53.10	32.93	59.56
25	57.83	14.14	57.39	3.71	62.96	56.02	13.37	51.80	24.35	53.24	33.12	59.85
26	57.67	13.82	57.50	3.36	63.25	55.77	13.77	51.76	24.70	53.42	33.29	60.14
27	57.52	13.50	57.63	3.02	63.56	55.54	14.17	51.74	25.03	53.59	33.46	60.41
28	57.39	13.16	57.79	2.69	63.87	55.32	14.56	51.74	25.34	53.76	33.63	60.66
29	57.28	12.82	57.95	2.37	64.20	55.11	14.94	51.75	25.64	53.92	33.81	60.92
30	57.17	12.47			64.54	54.92	15.31	51.75	25.92	54.08	34.01	61.18
31	57.09	12.12			64.87	54.76	15.65	51.76	26.20	54.23	34.21	61.46
32	57.03	11.78			65.19	54.60			26.50	54.37		

Mean R.A. 21<sup>h</sup> 15<sup>m</sup> 14<sup>s</sup>.023 Mean Dec. + 86° 43' 0".13 Sec δ 17.460 Tan δ + 17.432

## 248 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

B.A.C. 7504. Mag. 7.4

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 21 15	86° 43'	<sup>h</sup> <sup>m</sup> 21 15	86° 43'	<sup>h</sup> <sup>m</sup> 21 15	86° 43'	<sup>h</sup> <sup>m</sup> 21 15	86° 43'	<sup>h</sup> <sup>m</sup> 21 15	86° 43'	<sup>h</sup> <sup>m</sup> 21 14	86° 43'
1	<sup>s</sup> 34.21	1.46	<sup>s</sup> 37.28	11.78	<sup>s</sup> 34.46	22.78	<sup>s</sup> 26.81	31.84	<sup>s</sup> 15.39	37.69	<sup>s</sup> 63.16	38.62
2	34.42	1.76	37.28	12.17	34.25	23.12	26.48	32.07	15.01	37.80	62.79	38.56
3	34.64	2.07	37.26	12.54	34.04	23.43	26.16	32.29	14.64	37.91	62.42	38.51
4	34.84	2.40	37.23	12.92	33.84	23.74	25.84	32.52	14.26	38.02	62.04	38.47
5	35.02	2.74	37.18	13.28	33.63	24.04	25.52	32.74	13.88	38.13	61.64	38.42
6	35.18	3.08	37.13	13.63	33.43	24.34	25.21	32.97	13.49	38.24	61.23	38.37
7	35.31	3.41	37.07	13.96	33.24	24.65	24.90	33.22	13.08	38.36	60.81	38.29
8	35.43	3.73	37.02	14.29	33.05	24.97	24.59	33.46	12.66	38.47	60.39	38.19
9	35.54	4.05	36.98	14.61	32.86	25.28	24.27	33.71	12.22	38.55	59.97	38.08
10	35.66	4.36	36.94	14.94	32.68	25.60	23.93	33.96	11.78	38.61	59.57	37.94
11	35.77	4.66	36.90	15.28	32.48	25.94	23.58	34.20	11.33	38.66	59.19	37.79
12	35.88	4.95	36.87	15.63	32.27	26.28	23.20	34.44	10.88	38.70	58.83	37.64
13	36.00	5.25	36.83	15.99	32.04	26.61	22.81	34.66	10.44	38.73	58.49	37.51
14	36.13	5.56	36.79	16.35	31.79	26.96	22.41	34.87	10.03	38.75	58.16	37.39
15	36.26	5.87	36.74	16.71	31.51	27.29	22.00	35.05	9.64	38.77	57.83	37.27
16	36.39	6.19	36.67	17.09	31.22	27.61	21.61	35.22	9.25	38.80	57.49	37.16
17	36.52	6.53	36.58	17.47	30.92	27.90	21.23	35.38	8.87	38.84	57.14	37.04
18	36.64	6.87	36.48	17.86	30.63	28.17	20.87	35.55	8.49	38.89	56.78	36.92
19	36.75	7.23	36.35	18.23	30.34	28.44	20.52	35.72	8.08	38.95	56.40	36.79
20	36.84	7.60	36.20	18.59	30.07	28.72	20.17	35.91	7.67	39.00	56.01	36.64
21	36.90	7.97	36.05	18.93	29.80	28.99	19.82	36.10	7.24	39.02	55.64	36.46
22	36.94	8.33	35.90	19.26	29.55	29.28	19.45	36.30	6.80	39.03	55.28	36.26
23	36.96	8.68	35.76	19.58	29.31	29.59	19.07	36.51	6.36	39.03	54.93	36.05
24	36.97	9.02	35.63	19.91	29.05	29.89	18.67	36.70	5.92	39.01	54.60	35.83
25	36.98	9.35	35.51	20.25	28.78	30.20	18.25	36.88	5.49	38.96	54.29	35.61
26	37.00	9.68	35.40	20.59	28.48	30.52	17.83	37.04	5.07	38.91	53.99	35.39
27	37.04	10.00	35.29	20.96	28.16	30.82	17.40	37.17	4.66	38.85	53.71	35.18
28	37.09	10.32	35.17	21.33	27.83	31.10	16.97	37.29	4.28	38.80	53.43	34.98
29	37.15	10.66	35.02	21.71	27.49	31.36	16.56	37.39	3.90	38.74	53.15	34.78
30	37.21	11.02	34.85	22.07	27.15	31.60	16.16	37.49	3.51	38.68	52.88	34.58
31	37.25	11.40	34.66	22.43	26.81	31.84	15.77	37.59	3.16	38.62	52.60	34.38
32	37.28	11.78	34.46	22.78			15.39	37.69			52.31	34.17

Mean R.A. 21<sup>h</sup> 15<sup>m</sup> 14<sup>s</sup>.023 Mean Dec. + 86° 43' 0".13 Sec δ 17.460 Tan δ + 17.432

# APPARENT PLACES OF STARS, 1922. 249

## AT UPPER TRANSIT AT GREENWICH.

39 H Cephei. Mag. 5.6

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>	<sup>h</sup> <sup>m</sup>	<sup>s</sup>
	23 27	86 52	23 27	86 52	23 27	86 52	23 27	86 52	23 27	86 52	23 27	86 52
1	46.61	60.82	35.78	56.15	30.47	48.24	31.63	38.07	38.92	30.91	50.11	28.18
2	46.18	60.74	35.51	55.89	30.40	47.90	31.80	37.81	39.21	30.76	50.48	28.15
3	45.77	60.65	35.26	55.63	30.35	47.56	31.96	37.56	39.50	30.60	50.87	28.12
4	45.37	60.55	35.04	55.38	30.32	47.24	32.11	37.31	39.79	30.44	51.27	28.11
5	44.98	60.44	34.82	55.14	30.29	46.93	32.24	37.03	40.08	30.26	51.69	28.12
6	44.62	60.34	34.60	54.91	30.26	46.64	32.38	36.75	40.40	30.08	52.13	28.15
7	44.27	60.23	34.37	54.68	30.22	46.35	32.53	36.47	40.74	29.90	52.56	28.20
8	43.93	60.13	34.13	54.46	30.17	46.05	32.69	36.17	41.10	29.74	52.98	28.27
9	43.59	60.04	33.88	54.23	30.11	45.76	32.88	35.87	41.49	29.60	53.38	28.35
10	43.24	59.96	33.62	53.98	30.05	45.45	33.10	35.57	41.89	29.48	53.77	28.43
11	42.88	59.88	33.36	53.72	29.99	45.12	33.34	35.28	42.28	29.39	54.14	28.49
12	42.50	59.80	33.10	53.44	{29.92}	{44.78}	33.60	35.02	42.66	29.30	54.50	28.56
13	42.11	59.70	32.86	53.14	29.93	44.08	33.87	34.78	43.03	29.22	54.85	28.63
14	41.71	59.59	32.64	52.83	29.97	43.74	34.14	34.56	43.38	29.14	55.20	28.69
15	41.30	59.45	32.44	52.52	30.02	43.40	34.40	34.34	43.71	29.05	55.57	28.74
16	40.91	59.30	32.27	52.22	30.10	43.08	34.64	34.12	44.05	28.95	55.94	28.78
17	40.54	59.12	32.13	51.93	30.18	42.78	34.87	33.90	44.39	28.86	56.32	28.84
18	40.19	58.94	32.01	51.65	30.24	42.49	35.09	33.67	44.73	28.76	56.71	28.92
19	39.86	58.75	31.88	51.38	30.30	42.20	35.31	33.43	45.08	28.65	57.12	29.00
20	39.56	58.57	31.74	51.11	30.35	41.91	35.55	33.18	45.45	28.54	57.53	29.10
21	39.26	58.40	31.59	50.84	30.38	41.61	35.79	32.93	45.83	28.44	57.95	29.21
22	38.97	58.23	31.43	50.56	30.42	41.30	36.05	32.68	46.23	28.36	58.36	29.35
23	38.67	58.08	31.26	50.25	30.47	40.97	36.33	32.43	46.65	28.29	58.75	29.50
24	38.36	57.92	31.09	49.93	30.53	40.63	36.63	32.19	47.06	28.23	59.13	29.66
25	38.03	57.75	30.93	49.61	30.61	40.30	36.94	31.96	47.48	28.20	59.49	29.82
26	37.70	57.57	30.79	49.27	30.71	39.96	37.27	31.75	47.90	28.18	59.83	29.98
27	37.36	57.36	30.66	48.93	30.82	39.62	37.61	31.55	48.31	28.18	60.15	30.13
28	37.01	57.13	30.55	48.59	30.95	39.28	37.96	31.37	48.70	28.18	60.47	30.28
29	36.68	56.90	30.47	48.24	31.10	38.96	38.29	31.21	49.07	28.18	60.80	30.41
30	36.37	56.66			31.27	38.65	38.61	31.06	49.42	28.19	61.15	30.54
31	36.06	56.41			31.45	38.35	38.92	30.91	49.76	28.19	61.52	30.68
32	35.78	56.15			31.63	38.07			50.11	28.18		

Mean R.A. 23<sup>h</sup> 27<sup>m</sup> 42<sup>s</sup>.693 Mean Dec. + 86° 52' 38".23 Sec δ 18.357 Tan δ + 18.330

# 250 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

39 H Cephei. Mag. 5.6

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.	R.A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 23 28 86 52	<sup>h</sup> <sup>m</sup> 23 28 86 52	<sup>h</sup> <sup>m</sup> 23 28 86 52	<sup>h</sup> <sup>m</sup> 23 28 86 52	<sup>h</sup> <sup>m</sup> 23 28 86 52	<sup>h</sup> <sup>m</sup> 23 28 86 52	<sup>h</sup> <sup>m</sup> 23 28 86 52	<sup>h</sup> <sup>m</sup> 23 27 86 53	<sup>h</sup> <sup>m</sup> 23 27 86 53	<sup>h</sup> <sup>m</sup> 23 27 86 53	<sup>h</sup> <sup>m</sup> 23 27 86 53	<sup>h</sup> <sup>m</sup> 23 27 86 53
1	1 <sup>s</sup> 52 30.68	10.99 38.06	15.82 48.72	15.17 59.96	69.12 10.25	59.13 16.82						
2	1.91 30.83	11.26 38.38	15.85 49.09	15.03 60.29	68.85 10.51	58.79 16.96						
3	2.30 31.00	11.50 38.71	15.87 49.46	14.89 60.63	68.60 10.77	58.44 17.11						
4	2.69 31.19	11.71 39.05	15.89 49.82	14.76 60.97	68.35 11.04	58.07 17.26						
5	3.07 31.40	11.90 39.38	15.92 50.16	14.64 61.30	68.10 11.32	57.69 17.40						
6	3.43 31.62	12.08 39.70	15.95 50.50	14.53 61.64	67.84 11.61	57.30 17.55						
7	3.77 31.84	12.25 40.03	15.98 50.85	14.41 61.99	67.56 11.90	56.89 17.69						
8	4.09 32.07	12.42 40.32	16.02 51.20	14.30 62.33	67.27 12.19	56.45 17.81						
9	4.39 32.28	12.60 40.62	16.07 51.54	14.19 62.69	66.95 12.48	56.01 17.91						
10	4.68 32.49	12.78 40.91	16.12 51.90	14.06 63.07	66.61 12.75	55.57 17.99						
11	4.97 32.69	12.97 41.20	16.17 52.28	13.92 63.45	66.25 13.01	55.15 18.04						
12	5.27 32.89	13.18 41.50	16.21 52.68	13.75 63.83	65.89 13.24	54.75 18.09						
13	5.57 33.08	13.39 41.81	16.24 53.08	13.56 64.21	65.53 13.45	54.35 18.13						
14	5.88 33.28	13.59 42.14	16.25 53.49	13.34 64.57	65.18 13.66	53.98 18.19						
15	6.20 33.48	13.79 42.48	16.23 53.90	13.12 64.91	64.85 13.86	53.61 18.25						
16	6.53 33.70	13.98 42.84	16.18 54.31	12.89 65.24	64.53 14.08	53.25 18.32						
17	6.86 33.92	14.16 43.21	16.12 54.70	12.67 65.56	64.23 14.30	52.87 18.40						
18	7.19 34.15	14.31 43.59	16.05 55.07	12.46 65.87	63.94 14.53	52.48 18.48						
19	7.53 34.41	14.45 43.97	15.98 55.43	12.27 66.18	63.63 14.76	52.07 18.54						
20	7.85 34.68	14.56 44.34	15.92 55.77	12.09 66.50	63.30 15.01	51.64 18.59						
21	8.15 34.98	14.65 44.71	15.87 56.12	11.92 66.83	62.95 15.25	51.20 18.62						
22	8.42 35.28	14.74 45.06	15.84 56.48	11.75 67.18	62.58 15.48	50.75 18.63						
23	8.68 35.57	14.83 45.39	15.82 56.85	11.55 67.53	62.19 15.68	50.31 18.62						
24	8.91 35.85	14.94 45.72	15.81 57.23	11.33 67.89	61.79 15.86	49.89 18.59						
25	9.13 36.13	15.06 46.05	15.78 57.64	11.08 68.23	61.39 16.03	49.48 18.55						
26	9.36 36.39	15.19 46.39	15.73 58.05	10.82 68.56	61.00 16.18	49.07 18.51						
27	9.60 36.64	15.33 46.76	15.65 58.45	10.54 68.87	60.61 16.32	48.68 18.47						
28	9.86 36.89	15.46 47.14	15.55 58.85	10.25 69.17	60.22 16.45	48.31 18.43						
29	10.13 37.15	15.59 47.53	15.43 59.23	9.96 69.45	59.85 16.58	47.94 18.39						
30	10.42 37.43	15.69 47.93	15.30 59.60	9.67 69.73	59.49 16.70	47.57 18.35						
31	10.71 37.74	15.77 48.33	15.17 59.96	9.39 69.99	59.13 16.82	47.20 18.33						
32	10.99 38.06	15.82 48.72		9.12 70.25		46.82 18.31						

Mean R.A. 23<sup>h</sup> 27<sup>m</sup> 42<sup>s</sup>.693 Mean Dec. + 86° 52' 38".23 Sec δ 18.357 Tan δ + 18.330



# APPARENT PLACES OF STARS, 1922. 251

## AT UPPER TRANSIT AT GREENWICH.

o Octantis. Mag. 7.2

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	h m O I I 88° 48'		h m O I O 88° 47'		h m O I O 88° 47'		h m O I O 88° 47'		h m O I I 88° 47'		h m O I I 88° 47'	
	s		s		s		s		s		s	
1	39.57	6.68	71.18	60.53	55.13	51.36	50.95	39.25	1.45	28.57	24.47	20.57
2	38.61	6.57	70.39	60.28	54.72	51.02	51.04	38.85	2.09	28.23	25.42	20.41
3	37.64	6.48	69.59	60.02	54.29	50.67	51.19	38.44	2.78	27.91	26.32	20.26
4	36.65	6.38	68.77	59.74	53.86	50.31	51.41	38.04	3.49	27.60	27.18	20.11
5	35.62	6.28	67.95	59.45	53.45	49.93	51.68	37.63	4.19	27.31	27.98	19.95
6	34.56	6.17	67.15	59.13	53.07	49.53	52.00	37.25	4.85	27.03	28.77	19.79
7	33.48	6.04	66.40	58.80	52.75	49.13	52.34	36.87	5.45	26.76	29.57	19.62
8	32.38	5.90	65.71	58.45	52.50	48.72	52.65	36.52	6.02	26.50	30.42	19.43
9	31.28	5.73	65.09	58.10	52.33	48.31	52.91	36.18	6.56	26.22	31.31	19.25
10	30.21	5.53	64.52	57.77	52.21	47.91	53.13	35.84	7.11	25.92	32.26	19.07
11	29.18	5.33	64.00	57.44	52.11	47.54	53.32	35.49	7.69	25.62	33.26	18.91
12	28.22	5.12	63.50	57.12	52.01	47.17	53.49	35.12	8.32	25.31	34.28	18.77
13	27.33	4.91	62.97	56.82	51.87	46.81	53.68	34.75	9.00	25.01	35.32	18.65
14	26.48	4.69	62.39	56.53	51.69	46.46	53.92	34.36	9.74	24.72	36.36	18.55
15	25.65	4.49	61.77	56.23	51.46	46.10	54.21	33.97	10.52	24.43	37.38	18.45
16	24.82	4.30	61.11	55.92	51.21	45.72	54.57	33.60	11.33	24.16	38.37	18.36
17	23.95	4.12	60.45	55.58	50.96	45.34	54.98	33.22	12.16	23.91	39.34	18.28
18	23.03	3.94	59.80	55.23	50.75	44.94	55.44	32.86	12.98	23.67	40.28	18.21
19	22.06	3.76	59.19	54.87	50.60	44.52	55.92	32.51	13.79	23.44	41.19	18.13
20	21.06	3.56	58.64	54.50	50.51	44.11	56.41	32.17	14.59	23.22	42.08	18.05
21	20.04	3.35	58.14	54.12	50.48	43.70	56.90	31.84	15.36	23.01	42.97	17.96
22	19.05	3.11	57.70	53.75	50.50	43.30	57.37	31.53	16.10	22.79	43.86	17.87
23	18.11	2.84	57.31	53.39	{ 50.55 }	{ 42.85 }	57.82	31.22	16.84	22.58	44.77	17.77
24	17.23	2.57	56.95	53.04	50.69	42.17	58.26	30.91	17.56	22.36	45.73	17.66
25	16.40	2.30	56.59	52.70	50.76	41.81	58.67	30.60	18.28	22.14	46.74	17.57
26	15.62	2.03	56.24	52.36	50.83	41.45	59.07	30.28	19.02	21.90	47.82	17.49
27	14.87	1.77	55.88	52.02	50.88	41.10	59.48	29.95	19.80	21.65	48.93	17.43
28	14.14	1.52	55.51	51.69	50.90	40.75	59.90	29.61	20.64	21.41	50.05	17.38
29	13.41	1.26	55.13	51.36	50.91	40.39	60.36	29.27	21.55	21.17	51.14	17.36
30	12.68	1.01			50.91	40.02	60.87	28.92	22.51	20.95	52.16	17.36
31	11.94	0.77			50.92	39.64	61.45	28.57	23.49	20.75	53.13	17.36
32	11.18	0.53			50.95	39.25			24.47	20.57		

Mean R.A. o<sup>h</sup> 12<sup>m</sup> 17<sup>s</sup>.505 Mean Dec. — 88° 47' 47".81 Sec 47.616 Tan δ — 47.605

## 252 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

o Octantis. Mag. 7.2

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 0 11 88° 47'		<sup>h</sup> <sup>m</sup> 0 12 88° 47'		<sup>h</sup> <sup>m</sup> 0 12 88° 47'		<sup>h</sup> <sup>m</sup> 0 12 88° 47'		<sup>h</sup> <sup>m</sup> 0 12 88° 47'		<sup>h</sup> <sup>m</sup> 0 11 88° 47'	
1	53.13	17.36	22.13	19.29	43.06	25.96	48.88	35.15	37.00	44.31	71.26	49.56
2	54.04	17.36	22.91	19.42	43.59	26.23	48.86	35.49	36.30	44.58	70.17	49.65
3	54.92	17.35	23.73	19.55	44.11	26.51	48.79	35.84	35.56	44.84	69.07	49.72
4	55.80	17.33	24.59	19.68	44.61	26.80	48.66	36.19	34.78	45.10	67.99	49.77
5	56.69	17.30	25.47	19.82	45.08	27.11	48.47	36.54	33.98	45.33	66.93	49.82
6	57.63	17.27	26.38	19.98	45.50	27.43	48.24	36.87	33.16	45.55	65.91	49.85
7	58.62	17.25	27.28	20.16	45.87	27.75	47.97	37.20	32.36	45.76	64.94	49.87
8	59.66	17.24	28.15	20.36	46.18	28.08	47.67	37.52	31.58	45.95	64.01	49.89
9	60.73	17.25	28.99	20.56	46.44	28.40	47.34	37.83	30.84	46.13	63.08	49.93
10	61.80	17.26	29.79	20.78	46.67	28.72	47.00	38.13	30.14	46.31	62.15	49.97
11	62.86	17.30	30.55	21.01	46.87	29.03	46.67	38.41	29.45	46.50	61.18	50.02
12	63.91	17.35	31.26	21.24	47.06	29.33	46.37	38.69	28.75	46.71	60.14	50.07
13	64.93	17.42	31.93	21.47	47.25	29.61	46.10	38.97	28.02	46.92	59.04	50.12
14	65.92	17.50	32.56	21.69	47.46	29.88	45.86	39.25	27.23	47.14	57.89	50.15
15	66.87	17.58	33.18	21.90	47.70	30.15	45.62	39.54	26.37	47.36	56.72	50.15
16	67.78	17.66	33.80	22.11	47.97	30.43	45.35	39.85	25.44	47.56	55.56	50.13
17	68.67	17.74	34.42	22.30	48.26	30.72	45.03	40.17	24.46	47.73	54.43	50.09
18	69.52	17.82	35.08	22.49	48.54	31.04	44.64	40.50	23.46	47.89	53.35	50.03
19	70.37	17.88	35.78	22.69	48.78	31.37	44.17	40.82	22.47	48.02	52.31	49.96
20	71.25	17.94	36.52	22.90	48.96	31.72	43.63	41.13	21.51	48.14	51.33	49.91
21	72.16	18.00	37.27	23.12	49.06	32.06	43.05	41.42	20.59	48.26	50.36	49.86
22	73.10	18.05	38.00	23.36	49.09	32.40	42.46	41.68	19.71	48.38	49.39	49.82
23	74.09	18.12	38.68	23.62	49.04	32.73	41.88	41.93	18.86	48.50	48.42	49.78
24	75.12	18.20	39.30	23.90	48.97	33.04	41.33	42.17	18.01	48.63	47.43	49.75
25	76.15	18.30	39.85	24.18	48.90	33.34	40.81	42.42	17.15	48.77	46.41	49.72
26	77.16	18.42	40.33	24.46	48.85	33.63	40.31	42.67	16.26	48.91	45.35	49.68
27	78.12	18.57	40.75	24.73	48.83	33.92	39.83	42.93	15.34	49.05	44.27	49.63
28	79.01	18.73	41.17	24.98	48.84	34.21	39.33	43.20	14.38	49.19	43.16	49.57
29	79.84	18.88	41.59	25.22	48.86	34.50	38.81	43.47	13.38	49.33	42.04	49.49
30	80.62	19.02	42.05	25.46	48.88	34.82	38.25	43.75	12.34	49.45	40.91	49.39
31	81.38	19.16	42.54	25.70	48.88	35.15	37.65	44.03	11.26	49.56	39.80	49.28
32	82.13	19.29	43.06	25.96			37.00	44.31			38.71	49.14

Mean R.A. 0<sup>h</sup> 12<sup>m</sup> 17<sup>s</sup>.505 Mean Dec. — 88° 47' 47".81 Sec δ 47.616 Tan δ — 47.605

# APPARENT PLACES OF STARS, 1922. 253

AT UPPER TRANSIT AT GREENWICH.

9 B Octantis. Mag. 7.8

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 23 <sup>1</sup> 86° 4'		<sup>h</sup> <sup>m</sup> 23 <sup>1</sup> 86° 4'		<sup>h</sup> <sup>m</sup> 23 <sup>1</sup> 86° 4'		<sup>h</sup> <sup>m</sup> 23 <sup>1</sup> 86° 3'		<sup>h</sup> <sup>m</sup> 23 <sup>1</sup> 86° 3'		<sup>h</sup> <sup>m</sup> 23 <sup>1</sup> 86° 3'	
1	69.12	18.41	58.72	18.72	49.68	14.29	42.18	65.54	{38.84}	{54.93}	40.37	43.69
2	68.83	18.51	58.39	18.67	49.39	14.09	41.97	65.21	38.78	54.14	40.53	43.37
3	68.53	18.61	58.05	18.61	49.09	13.88	41.77	64.86	38.78	53.74	40.67	43.07
4	68.23	18.72	57.69	18.54	48.79	13.66	41.59	64.49	38.79	53.36	40.81	42.79
5	67.92	18.82	57.32	18.45	48.48	13.43	41.43	64.12	38.81	52.99	40.94	42.52
6	67.59	18.92	56.95	18.35	48.17	13.18	41.28	63.74	38.83	52.63	41.06	42.24
7	67.25	19.03	56.59	18.23	47.87	12.91	41.15	63.37	38.84	52.29	41.18	41.95
8	66.90	19.12	56.23	18.08	47.58	12.63	41.03	63.01	38.83	51.96	41.30	41.64
9	66.54	19.19	55.88	17.91	47.31	12.33	40.92	62.68	38.82	51.63	41.44	41.32
10	66.18	19.23	55.56	17.74	47.06	12.03	40.79	62.35	38.80	51.30	41.59	41.00
11	65.82	19.26	55.26	17.58	46.83	11.74	40.65	62.03	38.78	50.95	41.76	40.68
12	65.47	19.27	54.96	17.42	46.60	11.46	40.51	61.71	38.78	50.58	41.95	40.38
13	65.13	19.26	54.66	17.26	46.36	11.20	40.35	61.38	38.80	50.20	42.15	40.08
14	64.81	19.25	54.35	17.11	46.12	10.95	40.19	61.04	38.83	49.82	42.36	39.80
15	64.50	19.24	54.02	16.98	45.86	10.70	40.04	60.68	38.88	49.44	42.57	39.52
16	64.19	19.24	53.68	16.86	45.59	10.44	39.91	60.30	38.94	49.07	42.78	39.27
17	63.87	19.26	53.34	16.72	45.32	10.17	39.80	59.92	39.01	48.71	42.98	39.02
18	63.53	19.28	52.99	16.57	45.05	9.88	39.70	59.53	39.09	48.36	43.19	38.79
19	63.19	19.31	52.64	16.39	44.79	9.58	39.62	59.15	39.17	48.02	43.38	38.56
20	62.83	19.33	52.30	16.20	44.55	9.27	39.55	58.77	39.26	47.69	43.57	38.33
21	62.46	19.34	51.98	15.98	44.32	8.94	39.48	58.40	39.34	47.38	43.76	38.10
22	62.09	19.33	51.67	15.76	44.11	8.60	39.43	58.05	39.41	47.07	43.94	37.85
23	61.72	19.29	51.37	15.54	43.90	8.27	39.37	57.71	39.49	46.76	44.13	37.60
24	61.36	19.25	51.08	15.31	43.70	7.95	39.32	57.37	39.55	46.44	44.33	37.34
25	61.00	19.19	50.80	15.09	43.52	7.64	39.25	57.04	39.61	46.12	44.54	37.07
26	60.67	19.12	50.53	14.89	43.34	7.34	39.19	56.72	39.67	45.79	44.78	36.80
27	60.33	19.04	50.25	14.69	43.16	7.04	39.12	56.39	39.74	45.45	45.03	36.54
28	59.99	18.97	49.97	14.49	42.97	6.74	39.05	56.04	39.83	45.10	45.29	36.30
29	59.69	18.91	49.68	14.29	42.79	6.45	38.97	55.68	39.94	44.74	45.56	36.08
30	59.38	18.85			42.59	6.15	38.90	55.32	40.07	44.38	45.82	35.89
31	59.05	18.78			42.38	5.85	{38.84}	{54.93}	40.22	44.03	46.07	35.71
32	58.72	18.72			42.18	5.54	{38.80}	{54.54}	40.37	43.69		

Mean R.A. 2<sup>h</sup> 32<sup>m</sup> 7<sup>s</sup>.876 Mean Dec. — 86° 3' 56".00 Sec δ 14.574 Tan δ — 14.540

## 254 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

9 B Octantis. Mag. 7.8

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	h m	s	h m	s	h m	s	h m	s	h m	s	h m	s
	231	86° 3'	231	86° 3'	232	86° 3'	232	86° 3'	232	86° 3'	232	86° 3'
1	46.07	35.71	54.73	31.92	3.89	33.51	10.57	39.99	12.75	49.77	9.33	58.90
2	46.31	35.55	55.01	31.88	4.18	33.64	10.75	40.27	12.72	50.12	9.11	59.18
3	46.54	35.38	55.29	31.82	4.47	33.77	10.92	40.57	12.67	50.48	8.88	59.45
4	46.76	35.20	55.60	31.76	4.77	33.92	11.08	40.88	12.62	50.82	8.64	59.70
5	46.99	35.00	55.91	31.71	5.05	34.09	11.22	41.20	12.56	51.16	8.41	59.93
6	47.22	34.80	56.24	31.68	5.33	34.28	11.35	41.52	12.48	51.49	8.18	60.14
7	47.47	34.60	56.57	31.67	5.60	34.47	11.47	41.85	12.40	51.81	7.96	60.34
8	47.73	34.39	56.90	31.67	5.87	34.68	11.57	42.18	12.31	52.12	7.75	60.54
9	48.01	34.20	57.23	31.69	6.12	34.89	11.66	42.50	12.24	52.41	7.55	60.74
10	48.30	34.03	57.56	31.72	6.36	35.11	11.74	42.80	12.17	52.69	7.34	60.95
11	48.60	33.85	57.87	31.77	6.58	35.33	11.82	43.10	12.11	52.98	7.12	61.18
12	48.91	33.70	58.18	31.82	6.79	35.54	11.91	43.39	12.05	53.28	6.90	61.42
13	49.21	33.56	58.47	31.88	7.01	35.74	12.00	43.66	11.99	53.59	6.65	61.67
14	49.50	33.45	58.76	31.94	7.22	35.93	12.10	43.93	11.91	53.91	6.38	61.91
15	49.79	33.34	59.05	31.99	7.44	36.11	12.21	44.22	11.81	54.25	6.09	62.13
16	50.07	33.24	59.32	32.05	7.67	36.30	12.32	44.53	11.69	54.59	5.80	62.32
17	50.34	33.14	59.60	32.10	7.91	36.48	12.42	44.85	11.54	54.93	5.50	62.50
18	50.61	33.04	59.88	32.13	8.16	36.68	12.50	45.19	11.39	55.24	5.21	62.66
19	50.88	32.93	60.18	32.16	8.40	36.90	12.56	45.54	11.23	55.54	4.93	62.81
20	51.14	32.82	60.49	32.20	8.63	37.15	12.59	45.89	11.07	55.82	4.66	62.94
21	51.41	32.70	60.81	32.26	8.85	37.41	12.61	46.23	10.92	56.09	4.40	63.08
22	51.69	32.57	61.13	32.32	9.05	37.68	12.62	46.56	10.77	56.35	4.14	63.23
23	51.99	32.44	61.45	32.40	9.23	37.96	12.62	46.89	10.63	56.61	3.87	63.39
24	52.30	32.31	61.76	32.51	9.39	38.23	12.61	47.20	10.49	56.88	3.61	63.56
25	52.63	32.21	62.05	32.64	9.54	38.49	12.62	47.49	10.36	57.15	3.34	63.73
26	52.96	32.12	62.33	32.79	9.69	38.74	12.65	47.79	10.22	57.44	3.05	63.89
27	53.28	32.05	62.59	32.93	9.86	38.98	12.68	48.09	10.07	57.72	2.75	64.05
28	53.59	32.01	62.84	33.06	10.02	39.22	12.70	48.40	9.90	58.01	2.44	64.21
29	53.89	31.99	63.09	33.18	10.20	39.46	12.72	48.73	9.73	58.31	2.12	64.35
30	54.18	31.98	63.34	33.29	10.39	39.72	12.74	49.06	9.54	58.61	1.79	64.49
31	54.46	31.95	63.61	33.40	10.57	39.99	12.75	49.41	9.33	58.90	1.46	64.61
32	54.73	31.92	63.89	33.51			12.75	49.77			1.13	64.71

Mean R.A. 2<sup>h</sup> 32<sup>m</sup> 7<sup>s</sup>.876 Mean Dec. — 86° 3' 56".00 Sec δ 14.574 Tan δ — 14.540

# APPARENT PLACES OF STARS, 1922. 255

## AT UPPER TRANSIT AT GREENWICH.

10 B Octantis. Mag. 8.4

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 2 51	88° 29'	<sup>h</sup> <sup>m</sup> 2 50	88° 29'	<sup>h</sup> <sup>m</sup> 2 50	88° 29'	<sup>h</sup> <sup>m</sup> 2 50	88° 29'	<sup>h</sup> <sup>m</sup> 2 50	88° 28'	<sup>h</sup> <sup>m</sup> 2 50	88° 28'
	<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>	
1	45.19	28.57	77.83	29.67	53.11	25.93	31.58	17.83	20.49	67.61	21.78	56.43
2	44.43	28.69	76.94	29.63	52.31	25.75	30.97	17.51	20.29	67.21	22.11	56.12
3	43.67	28.82	76.02	29.59	51.48	25.57	30.37	17.19	20.14	66.82	22.42	55.82
4	42.90	28.95	75.06	29.55	50.63	25.39	29.81	16.85	20.05	66.43	22.70	55.53
5	42.11	29.07	74.08	29.49	49.77	25.18	29.29	16.49	{ 20.00 19.97 }	{ 66.07 65.71 }	22.96	55.25
6	41.28	29.20	73.08	29.42	48.90	24.96	28.82	16.12	19.94	65.36	23.19	54.96
7	40.40	29.32	72.09	29.32	48.05	24.71	28.40	15.77	19.89	65.02	23.41	54.66
8	39.49	29.44	71.12	29.21	47.24	24.45	28.01	15.42	19.80	64.70	23.64	54.35
9	38.55	29.53	70.18	29.07	46.48	24.17	27.63	15.09	19.68	64.37	23.92	54.04
10	37.59	29.60	69.28	28.92	45.76	23.90	27.24	14.78	19.55	64.04	24.24	53.71
11	36.64	29.65	68.43	28.78	45.08	23.62	26.83	14.49	19.42	63.69	24.60	53.39
12	35.71	29.69	67.61	28.64	44.42	23.36	26.38	14.19	19.32	63.33	25.01	53.08
13	34.82	29.71	66.79	28.52	43.76	23.12	25.91	13.87	19.27	62.96	25.45	52.77
14	33.96	29.72	65.95	28.40	43.07	22.89	25.42	13.53	19.25	62.58	25.91	52.47
15	33.13	29.74	65.08	28.30	42.34	22.66	24.94	13.18	19.28	62.20	26.39	52.20
16	32.31	29.77	64.16	28.19	41.59	22.43	24.51	12.83	19.36	61.83	26.88	51.94
17	31.49	29.81	63.22	28.08	40.82	22.18	24.12	12.46	19.47	61.47	27.36	51.68
18	30.64	29.86	62.26	27.94	40.05	21.92	23.77	12.09	19.59	61.13	27.82	51.43
19	29.73	29.91	61.30	27.78	39.29	21.63	23.46	11.73	19.73	60.79	28.27	51.19
20	28.78	29.96	60.37	27.61	38.57	21.33	23.19	11.36	19.87	60.46	28.70	50.94
21	27.80	29.99	59.46	27.43	37.89	21.02	22.95	11.00	20.01	60.14	29.11	50.70
22	26.80	30.01	58.60	27.24	37.26	20.71	22.73	10.65	20.13	59.83	29.52	50.45
23	25.82	30.01	57.77	27.04	36.66	20.40	22.51	10.32	20.24	59.52	29.94	50.19
24	24.85	29.99	56.97	26.84	36.09	20.10	22.29	9.99	20.34	59.20	30.38	49.91
25	23.91	29.96	56.19	26.66	35.54	19.81	22.06	9.66	20.42	58.87	30.86	49.63
26	23.00	29.91	55.42	26.47	35.00	19.53	21.82	9.34	20.49	58.55	31.39	49.36
27	22.11	29.86	54.66	26.29	34.47	19.25	21.56	9.02	20.59	58.21	31.98	49.09
28	21.25	29.81	53.89	26.11	33.93	18.97	21.29	8.69	20.73	57.85	32.61	48.84
29	20.40	29.77	53.11	25.93	33.37	18.69	21.01	8.35	20.91	57.48	33.24	48.60
30	19.55	29.74			32.79	18.41	20.74	7.98	21.15	57.12	33.87	48.38
31	18.70	29.70			32.19	18.12	20.49	7.61	21.45	56.76	34.47	48.19
32	17.83	29.67			31.58	17.83			21.78	56.43		

Mean R.A. 2<sup>h</sup> 51<sup>m</sup> 37<sup>s</sup>.695 Mean Dec. — 88° 29' 6".36 Sec δ 37.826 Tan δ — 37.813

# 256 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

10 B Octantis. Mag. 8.4

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 2 50 88° 28'		<sup>h</sup> <sup>m</sup> 2 50 88° 28'		<sup>h</sup> <sup>m</sup> 2 51 88° 28'		<sup>h</sup> <sup>m</sup> 2 51 88° 28'		<sup>h</sup> <sup>m</sup> 2 51 88° 29'		<sup>h</sup> <sup>m</sup> 2 51 88° 29'	
1	34.47	48.19	55.63	43.85	19.29	44.80	37.66	50.74	45.07	0.23	37.77	9.53
2	35.04	48.00	56.32	43.79	20.04	44.90	38.18	51.01	45.08	0.58	37.25	9.82
3	35.58	47.82	57.03	43.72	20.82	45.01	38.68	51.29	45.05	0.94	36.70	10.11
4	36.09	47.63	57.78	43.65	21.60	45.14	39.16	51.58	44.97	1.28	36.12	10.37
5	36.61	47.43	58.57	43.58	22.38	45.29	39.61	51.88	44.86	1.63	35.53	10.61
6	37.15	47.22	59.39	43.53	23.15	45.45	40.01	52.19	44.72	1.96	34.96	10.83
7	37.73	47.00	60.23	43.49	23.89	45.62	40.38	52.50	44.56	2.28	34.42	11.05
8	38.35	46.78	61.08	43.47	24.61	45.81	40.72	52.81	44.39	2.58	33.90	11.27
9	39.02	46.57	61.93	43.47	25.30	46.00	41.01	53.12	44.23	2.88	33.39	11.49
10	39.73	46.37	62.78	43.47	25.95	46.19	41.28	53.42	44.10	3.17	32.89	11.72
11	40.46	46.19	63.60	43.49	26.57	46.39	41.53	53.71	43.99	3.46	32.37	11.96
12	41.19	46.02	64.40	43.52	27.16	46.59	41.79	53.99	43.89	3.76	31.81	12.21
13	41.92	45.87	65.18	43.56	27.73	46.78	42.07	54.25	43.78	4.08	31.20	12.47
14	42.66	45.73	65.93	43.59	28.31	46.95	42.38	54.51	43.64	4.41	30.53	12.72
15	43.38	45.59	66.65	43.63	28.90	47.11	42.71	54.80	43.45	4.75	29.82	12.96
16	44.08	45.47	67.36	43.67	29.52	47.28	43.04	55.09	43.20	5.09	29.07	13.18
17	44.76	45.35	68.06	43.69	30.18	47.45	43.35	55.40	42.90	5.43	28.31	13.38
18	45.41	45.23	68.78	43.70	30.86	47.63	43.62	55.73	42.54	5.76	27.58	13.56
19	46.05	45.11	69.54	43.72	31.53	47.83	43.84	56.07	42.17	6.07	26.86	13.73
20	46.70	44.98	70.33	43.74	32.18	48.05	44.00	56.41	41.79	6.35	26.16	13.89
21	47.35	44.85	71.15	43.77	32.78	48.29	44.11	56.75	41.42	6.62	25.49	14.05
22	48.03	44.70	71.99	43.81	33.33	48.55	44.18	57.08	41.07	6.89	24.84	14.22
23	48.75	44.55	72.83	43.88	33.83	48.81	44.23	57.40	40.74	7.17	24.18	14.40
24	49.52	44.40	73.65	43.96	34.29	49.07	44.29	57.70	40.43	7.45	23.51	14.58
25	50.33	44.28	74.43	44.06	34.73	49.31	44.37	57.99	40.12	7.73	22.82	14.77
26	51.15	44.18	75.16	44.18	35.17	49.55	44.47	58.28	39.80	8.02	22.11	14.95
27	51.97	44.10	75.86	44.30	35.63	49.78	44.58	58.58	39.46	8.32	21.37	15.13
28	52.76	44.04	76.53	44.42	36.11	50.01	44.71	58.89	39.09	8.62	20.59	15.31
29	53.52	43.99	77.19	44.52	36.61	50.24	44.83	59.22	38.69	8.92	19.78	15.47
30	54.25	43.95	77.86	44.62	37.13	50.48	44.93	59.55	38.25	9.23	18.93	15.63
31	54.94	43.90	78.56	44.71	37.66	50.74	45.02	59.88	37.77	9.53	18.06	15.76
32	55.63	43.85	79.29	44.80			45.07	60.23			17.19	15.88

Mean R.A. 2<sup>h</sup> 51<sup>m</sup> 37<sup>s</sup>.695 Mean Dec. — 88° 29' 6".36 Sec δ 37.826 Tan δ — 37.813

# APPARENT PLACES OF STARS, 1922. 257

AT UPPER TRANSIT AT GREENWICH.

31 G Mensæ. Mag. 6.2

Day.	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.		
	R.A.	Dec. S.		R.A.	Dec. S.		R.A.	Dec. S.		R.A.	Dec. S.		R.A.	Dec. S.		R.A.	Dec. S.	
	h m	°		h m	°		h m	°		h m	°		h m	°		h m	°	
	5 45	84 49		5 45	84 50		5 45	84 50		5 45	84 50		5 44	84 49		5 44	84 49	
1	29 47 <sup>s</sup>	54 52		24 38 <sup>s</sup>	3 06		17 36 <sup>s</sup>	7 25		8 75 <sup>s</sup>	7 29		61 34 <sup>s</sup>	62 83		56 27 <sup>s</sup>	54 57	
2	29 38	54 84		24 17	3 30		17 09	7 34		8 47	7 23		61 11	62 60		56 18	54 23	
3	29 28	55 14		23 96	3 53		16 82	7 44		8 18	7 15		60 89	62 35		56 10	53 90	
4	29 18	55 45		23 74	3 76		16 55	7 54		7 89	7 06		60 68	62 09		56 02	53 59	
5	29 08	55 77		23 51	3 99		16 26	7 63		7 61	6 94		60 48	61 84		55 95	53 30	
6	28 98	56 10		23 26	4 21		15 96	7 70		7 33	6 81		60 29	61 59		55 87	53 03	
7	28 86	56 44		23 01	4 41		15 66	7 75		7 07	6 66		60 12	61 35		55 77	52 76	
8	28 73	56 79		22 75	4 60		15 36	7 79		6 81	6 52		59 95	61 12		55 68	52 48	
9	28 58	57 12		22 49	4 76		15 07	7 81		6 56	6 38		59 77	60 90		55 58	52 18	
10	28 42	57 44		22 24	4 91		14 78	7 80		6 32	6 26		59 58	60 68		55 49	51 86	
11	28 26	57 75		21 99	5 05		14 51	7 79		6 08	6 15		59 39	60 46		55 40	51 54	
12	28 09	58 04		21 74	5 19		14 24	7 78		5 83	6 04		59 20	60 24		55 33	51 19	
13	27 92	58 31		21 50	5 33		13 98	7 79		5 58	5 94		59 00	60 00		55 27	50 84	
14	27 75	58 56		21 27	5 48		13 71	7 82		5 32	5 84		58 81	59 74		55 22	50 50	
15	27 59	58 81		21 03	5 64		13 44	7 85		5 05	5 73		58 63	59 48		55 18	50 16	
16	27 43	59 06		20 79	5 81		13 15	7 88		4 78	5 59		58 45	59 20		55 14	49 81	
17	27 28	59 33		20 53	5 99		12 87	7 92		4 51	5 43		58 28	58 91		55 12	49 48	
18	27 13	59 61		20 26	6 17		12 58	7 94		4 25	5 24		58 13	58 61		{ 55 08 } { 48 15 }	{ 48 15 }	
19	26 97	59 90		19 99	6 32		12 28	7 95		4 01	5 05		57 98	58 32		55 06	48 54	
20	26 79	60 20		19 71	6 46		11 98	7 93		3 78	4 86		57 85	58 02		55 03	48 25	
21	26 61	60 50		19 44	6 57		11 69	7 89		3 55	4 67		57 72	57 74		55 01	47 95	
22	26 41	60 79		19 17	6 68		11 40	7 84		3 33	4 47		57 60	57 47		54 98	47 66	
23	26 21	61 07		18 90	6 77		11 13	7 77		3 11	4 28		57 47	57 21		54 94	47 34	
24	26 00	61 32		18 63	6 85		10 86	7 71		2 90	4 10		57 34	56 95		54 91	47 01	
25	25 79	61 56		18 37	6 92		10 59	7 65		2 69	3 92		57 20	56 69		54 89	46 68	
26	25 58	61 79		18 11	7 00		10 33	7 58		2 47	3 75		57 06	56 42		54 87	46 32	
27	25 38	62 00		17 86	7 08		10 07	7 52		2 26	3 58		56 92	56 15		54 87	45 96	
28	25 17	62 20		17 61	7 16		9 82	7 47		2 04	3 41		56 78	55 87		54 88	45 59	
29	24 97	62 41		17 36	7 25		9 56	7 43		1 81	3 23		56 64	55 57		54 90	45 24	
30	24 78	62 62					9 29	7 38		1 57	3 04		56 50	55 25		54 94	44 92	
31	24 58	62 83					9 02	7 34		1 34	2 83		56 38	54 91		54 98	44 60	
32	24 38	63 06					8 75	7 29					56 27	54 57				

Mean R.A. 5<sup>h</sup> 45<sup>m</sup> 16<sup>s</sup>.372 Mean Dec. — 84° 49' 40".23 Sec δ 11.093 Tan δ — 11.048

# 258 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

31 G Mensæ. Mag. 6.2

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	h m	°	h m	°	h m	°	h m	°	h m	°	h m	°
	5 44	84 49	5 44	84 49	5 45	84 49	5 45	84 49	5 45	84 49	5 45	84 49
1	54.98	44.60	57.56	35.50	3.31	29.61	10.38	28.92	16.88	33.97	20.20	42.99
2	55.01	44.30	57.68	35.26	3.53	29.47	10.63	28.98	17.07	34.23	20.24	43.36
3	55.04	44.02	57.81	35.01	3.76	29.34	10.89	29.05	17.24	34.50	20.27	43.72
4	55.06	43.74	57.95	34.75	4.00	29.22	11.14	29.14	17.41	34.78	20.29	44.08
5	55.08	43.44	58.09	34.49	4.24	29.12	11.39	29.23	17.57	35.07	20.29	44.43
6	55.10	43.13	58.25	34.22	4.49	29.02	11.63	29.34	17.71	35.36	20.29	44.77
7	55.13	42.81	58.42	33.95	4.74	28.94	11.87	29.48	17.84	35.65	20.30	45.09
8	55.17	42.47	58.59	33.70	4.99	28.88	12.10	29.62	17.96	35.92	20.30	45.41
9	55.21	42.14	58.78	33.46	5.23	28.82	12.33	29.77	18.08	36.19	20.31	45.71
10	55.27	41.80	58.97	33.23	5.47	28.80	12.54	29.92	18.21	36.44	20.32	46.02
11	55.34	41.46	59.16	33.01	5.71	28.77	12.74	30.06	18.35	36.70	20.34	46.34
12	55.41	41.13	59.35	32.81	5.94	28.75	12.94	30.19	18.49	36.95	20.36	46.69
13	55.50	40.81	59.54	32.62	6.16	28.72	13.14	30.31	18.62	37.21	20.36	47.05
14	55.59	40.50	59.72	32.44	6.38	28.69	13.35	30.43	18.76	37.49	20.34	47.43
15	55.69	40.19	59.90	32.27	6.60	28.65	13.56	30.55	18.90	37.80	20.32	47.81
16	55.78	39.91	60.08	32.09	6.82	28.59	13.78	30.68	19.02	38.13	20.28	48.18
17	55.87	39.64	60.25	31.91	7.05	28.54	14.01	30.83	19.13	38.47	20.23	48.55
18	55.96	39.37	60.42	31.72	7.30	28.49	14.24	31.00	19.22	38.82	20.18	48.89
19	56.05	39.09	60.60	31.52	7.54	28.46	14.46	31.20	19.30	39.16	20.12	49.22
20	56.14	38.82	60.79	31.31	7.80	28.45	14.67	31.41	19.38	39.48	20.06	49.53
21	56.23	38.54	60.98	31.11	8.06	28.47	14.87	31.63	19.45	39.80	20.01	49.84
22	56.31	38.24	61.19	30.91	8.31	28.51	15.06	31.85	19.52	40.10	19.97	50.15
23	56.40	37.93	61.41	30.72	8.55	28.56	15.24	32.07	19.60	40.39	19.92	50.46
24	56.49	37.62	61.64	30.55	8.78	28.63	15.41	32.28	19.68	40.68	19.87	50.79
25	56.60	37.30	61.86	30.41	9.01	28.69	15.58	32.49	19.76	40.98	19.82	51.12
26	56.73	36.99	62.08	30.29	9.23	28.74	15.76	32.69	19.84	41.29	19.77	51.46
27	56.87	36.69	62.30	30.19	9.45	28.78	15.95	32.88	19.93	41.61	19.70	51.81
28	57.01	36.42	62.50	30.09	9.66	28.82	16.13	33.07	20.01	41.94	19.63	52.16
29	57.15	36.17	62.70	29.98	9.90	28.85	16.32	33.27	20.08	42.27	19.54	52.52
30	57.30	35.95	62.90	29.87	10.14	28.88	16.50	33.49	20.14	42.62	19.45	52.88
31	57.44	35.73	63.10	29.74	10.38	28.92	16.69	33.73	20.20	42.99	19.34	53.23
32	57.56	35.50	63.31	29.61			16.88	33.97			19.23	53.56

Mean R.A. 5<sup>h</sup> 45<sup>m</sup> 16<sup>s</sup>.372 Mean Dec. — 84° 49' 40".23 Sec δ 11.093 Tan δ — 11.048



# APPARENT PLACES OF STARS, 1922. 259

AT UPPER TRANSIT AT GREENWICH.

12 B Octantis. Mag. 6.8

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>
	6 0	85 56	6 0	85 56	6 0	85 56	6 0	85 56	5 59	85 56	5 59	85 56
1	<sup>s</sup> 40.54	12.17	<sup>s</sup> 34.50	21.11	<sup>s</sup> 25.78	25.89	<sup>s</sup> 14.83	26.70	<sup>s</sup> 65.11	22.97	<sup>s</sup> 58.11	15.25
2	40.43	12.48	34.25	21.35	25.45	26.01	14.47	26.67	64.80	22.76	57.97	14.93
3	40.32	12.80	34.00	21.60	25.11	26.12	14.09	26.62	64.50	22.53	57.84	14.62
4	40.21	13.13	33.73	21.85	24.77	26.24	13.71	26.55	64.22	22.29	57.73	14.32
5	40.11	13.45	33.44	22.10	24.41	26.36	13.34	26.46	63.96	22.06	57.62	14.04
6	39.99	13.78	33.14	22.35	24.04	26.46	12.98	26.35	63.71	21.83	57.50	13.77
7	39.85	14.13	32.83	22.57	23.66	26.55	12.64	26.23	63.46	21.61	57.36	13.50
8	39.71	14.48	32.51	22.77	23.28	26.61	12.30	26.12	63.22	21.40	57.22	13.23
9	39.54	14.82	32.19	22.95	22.91	26.65	11.98	26.01	62.99	21.20	57.08	12.94
10	39.36	15.16	31.87	23.12	22.54	26.67	11.67	25.91	62.74	21.01	56.94	12.63
11	39.16	15.48	31.56	23.27	22.18	26.68	11.35	25.82	62.48	20.81	56.81	12.33
12	38.95	15.78	31.25	23.43	21.84	26.70	11.03	25.74	62.22	20.60	56.70	11.99
13	38.74	16.06	30.96	23.59	21.51	26.73	10.70	25.67	61.95	20.38	56.59	11.65
14	38.54	16.32	30.67	23.77	21.17	26.78	10.36	25.59	61.69	20.14	56.50	11.31
15	38.35	16.59	30.38	23.96	20.82	26.83	10.01	25.49	61.43	19.89	56.42	10.97
16	38.17	16.85	30.08	24.15	20.48	26.89	9.66	25.38	61.19	19.62	56.35	10.64
17	37.99	17.13	29.76	24.35	20.12	26.96	9.32	25.24	60.97	19.34	56.30	10.32
18	37.82	17.42	29.43	24.55	19.74	27.01	8.98	25.09	60.76	19.07	56.25	10.00
19	37.63	17.73	29.09	24.73	19.37	27.04	8.65	24.93	60.56	18.80	56.20	9.70
20	37.42	18.04	28.74	24.89	18.99	27.04	8.34	24.76	60.36	18.53	56.16	9.40
21	37.20	18.36	28.40	25.03	18.61	27.03	8.03	24.59	60.17	18.27	{ <sup>56.11</sup> <sub>56.06</sub> }	{ <sup>9.11</sup> <sub>8.82</sub> }
22	36.97	18.67	28.06	25.15	18.24	27.01	7.74	24.41	59.99	18.01	56.00	8.52
23	36.72	18.96	27.72	25.26	17.89	26.97	7.45	24.23	59.81	17.75	55.94	8.21
24	36.47	19.23	27.38	25.36	17.53	26.93	7.17	24.07	59.62	17.50	55.87	7.89
25	36.21	19.48	27.05	25.47	17.19	26.88	6.90	23.92	59.44	17.26	55.81	7.57
26	35.96	19.72	26.73	25.57	16.86	26.84	6.62	23.77	59.24	17.02	55.77	7.22
27	35.71	19.94	26.41	25.67	16.52	26.81	6.33	23.62	59.04	16.76	55.74	6.86
28	35.46	20.16	26.09	25.77	16.20	26.79	6.04	23.47	58.85	16.49	55.73	6.50
29	35.22	20.39	25.78	25.89	15.87	26.76	5.74	23.32	58.65	16.19	55.74	6.16
30	34.98	20.62			15.52	26.74	5.43	23.16	58.46	15.89	55.76	5.83
31	34.74	20.86			15.18	26.72	5.11	22.97	58.27	15.58	55.79	5.51
32	34.50	21.11			14.83	26.70			58.11	15.25		

Mean R.A. 6<sup>h</sup> 0<sup>m</sup> 23<sup>s</sup>.118 Mean Dec. — 85° 55' 59".05 Sec δ 14.100 Tan δ — 14.065

# 260 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

12 B Octantis. Mag. 6.8

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 5 59	<sup>°</sup> <sup>'</sup> 85 55	<sup>h</sup> <sup>m</sup> 5 59	<sup>°</sup> <sup>'</sup> 85 55	<sup>h</sup> <sup>m</sup> 6 0	<sup>°</sup> <sup>'</sup> 85 55	<sup>h</sup> <sup>m</sup> 6 0	<sup>°</sup> <sup>'</sup> 85 55	<sup>h</sup> <sup>m</sup> 6 0	<sup>°</sup> <sup>'</sup> 85 55	<sup>h</sup> <sup>m</sup> 6 0	<sup>°</sup> <sup>'</sup> 85 56
1	<sup>s</sup> 55.79	<sup>s</sup> 65.51	<sup>s</sup> 58.45	<sup>s</sup> 56.29	<sup>s</sup> 5.34	<sup>s</sup> 49.97	<sup>s</sup> 14.23	<sup>s</sup> 48.70	<sup>s</sup> 22.74	<sup>s</sup> 53.15	<sup>s</sup> 27.40	<sup>s</sup> 1.84
2	55.82	65.22	58.60	56.04	5.61	49.82	14.55	48.73	22.99	53.39	27.47	2.20
3	55.84	64.94	58.74	55.78	5.90	49.67	14.87	48.77	23.22	53.65	27.52	2.56
4	55.85	64.66	58.89	55.51	6.19	49.53	15.19	48.83	23.44	53.91	27.57	2.92
5	55.85	64.36	59.06	55.24	6.49	49.40	15.52	48.92	23.65	54.18	27.60	3.27
6	55.85	64.05	59.24	54.96	6.79	49.29	15.84	49.02	23.85	54.46	27.62	3.60
7	55.87	63.73	59.43	54.68	7.11	49.19	16.14	49.13	24.03	54.74	27.64	3.91
8	55.89	63.39	59.64	54.41	7.42	49.11	16.43	49.25	24.21	55.00	27.66	4.21
9	55.92	63.06	59.86	54.16	7.73	49.05	16.72	49.38	24.38	55.25	27.69	4.51
10	55.97	62.72	60.08	53.92	8.03	48.99	17.00	49.50	24.55	55.49	27.72	4.83
11	56.04	62.37	60.31	53.69	8.32	48.94	17.27	49.62	24.72	55.73	27.76	5.16
12	56.12	62.03	60.54	53.47	8.61	48.89	17.53	49.74	24.91	55.97	27.80	5.50
13	56.20	61.70	60.77	53.27	8.90	48.85	17.80	49.84	25.11	56.22	27.82	5.87
14	56.29	61.39	60.99	53.08	9.17	48.80	18.07	49.94	25.30	56.50	27.83	6.24
15	56.40	61.09	61.21	52.89	9.44	48.74	18.34	50.04	25.48	56.79	27.82	6.63
16	56.50	60.81	61.42	52.71	9.72	48.66	18.63	50.15	25.66	57.11	27.78	7.00
17	56.60	60.53	61.63	52.51	10.01	48.59	18.93	50.28	25.81	57.43	27.74	7.36
18	56.69	60.25	61.83	52.30	10.31	48.52	19.23	50.43	25.95	57.77	27.68	7.70
19	56.79	59.98	62.04	52.08	10.63	48.46	19.52	50.61	26.07	58.10	27.63	8.03
20	56.87	59.70	62.26	51.86	10.95	48.43	19.80	50.80	26.18	58.42	27.57	8.36
21	56.95	59.41	62.49	51.63	11.27	48.43	20.06	51.01	26.28	58.73	27.51	8.67
22	57.03	59.11	62.74	51.42	11.60	48.46	20.30	51.22	26.39	59.02	27.47	8.98
23	57.12	58.80	63.01	51.22	11.90	48.49	20.54	51.41	26.50	59.31	27.42	9.31
24	57.23	58.48	63.28	51.05	12.20	48.53	20.77	51.60	26.62	59.59	27.38	9.63
25	57.36	58.15	63.56	50.89	12.48	48.57	21.00	51.79	26.74	59.87	27.33	9.96
26	57.50	57.83	63.83	50.76	12.76	48.60	21.23	51.97	26.86	60.17	27.28	10.31
27	57.66	57.53	64.10	50.63	13.04	48.63	21.48	52.14	26.98	60.48	27.22	10.67
28	57.83	57.25	64.35	50.51	13.32	48.65	21.72	52.32	27.09	60.81	27.15	11.02
29	58.00	56.99	64.60	50.40	13.61	48.66	21.97	52.50	27.21	61.15	27.06	11.37
30	58.16	56.76	64.84	50.27	13.91	48.67	22.22	52.70	27.31	61.49	26.96	11.68
31	58.31	56.53	65.09	50.12	14.23	48.70	22.48	52.92	27.40	61.84	26.85	11.98
32	58.45	56.29	65.34	49.97			22.74	53.15			26.72	12.30

Mean R.A. 6<sup>h</sup> 0<sup>m</sup> 23<sup>s</sup>.118 Mean Dec. — 85° 55' 59".05 Sec δ 14.100 Tan δ — 14.065

# APPARENT PLACES OF STARS, 1922. 261

## AT UPPER TRANSIT AT GREENWICH.

A Octantis. Mag. 7.8

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>	
	7 37	88° 37'	7 36	88° 37'	7 36	88° 38'	7 35	88° 38'	7 35	88° 38'	7 34	88° 37'
	<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>	
1	9.08	43.76	62.17	54.50	43.50	2.66	74.44	8.18	43.58	9.08	75.64	65.24
2	9.13	44.09	61.76	54.83	42.74	2.91	73.40	8.31	42.50	9.03	74.89	65.02
3	9.19	44.42	61.34	55.18	41.96	3.17	72.32	8.43	41.42	8.96	74.19	64.80
4	9.25	44.75	60.88	55.52	41.15	3.43	71.20	8.53	40.37	8.87	73.54	64.59
5	9.30	45.11	60.37	55.87	40.30	3.69	70.07	8.61	39.37	8.77	72.91	64.40
6	9.34	45.46	59.80	56.22	39.39	3.94	68.95	8.67	38.43	8.68	72.27	64.22
7	9.35	45.83	59.18	56.57	38.43	4.18	67.87	8.72	37.52	8.57	71.60	64.04
8	9.31	46.21	58.51	56.90	37.44	4.39	66.84	8.75	36.64	8.49	70.90	63.85
9	9.23	46.61	57.82	57.21	36.44	4.59	65.85	8.78	35.77	8.43	70.18	63.66
10	9.08	46.99	57.13	57.50	35.46	4.77	64.88	8.83	34.87	8.37	69.45	63.46
11	8.87	47.37	56.44	57.78	34.51	4.94	63.93	8.90	33.94	8.31	68.72	63.24
12	8.62	47.74	55.79	58.04	33.60	5.11	62.96	8.97	32.97	8.25	68.01	63.00
13	8.35	48.08	55.18	58.31	32.73	5.28	61.96	9.05	31.98	8.17	67.33	62.75
14	8.08	48.41	54.60	58.60	31.87	5.47	60.92	9.13	30.98	8.07	66.70	62.48
15	7.84	48.73	54.01	58.90	31.01	5.68	59.84	9.19	30.00	7.95	66.12	62.22
16	7.63	49.06	53.40	59.21	30.13	5.89	58.74	9.23	29.03	7.81	65.57	61.93
17	7.45	49.41	52.76	59.53	29.20	6.11	57.64	9.26	28.10	7.67	65.06	61.66
18	7.28	49.73	52.06	59.86	28.22	6.31	56.54	9.28	27.21	7.51	64.58	61.40
19	7.10	50.09	51.31	60.17	27.19	6.50	55.46	9.28	26.34	7.34	64.11	61.15
20	6.89	50.46	50.52	60.47	26.15	6.67	54.41	9.26	25.51	7.18	63.66	60.91
21	6.62	50.84	49.71	60.74	25.12	6.83	53.39	9.23	24.71	7.03	63.20	60.68
22	6.30	51.22	48.90	61.00	24.09	6.96	52.40	9.20	23.93	6.88	62.71	60.45
23	5.93	51.60	48.08	61.25	23.06	7.08	51.44	9.18	23.16	6.74	62.19	60.21
24	5.52	51.95	47.28	61.49	22.06	7.20	50.50	9.16	22.39	6.60	61.65	59.97
25	5.09	52.29	46.50	61.72	21.08	7.32	49.56	9.14	21.60	6.46	61.11	59.71
26	4.65	52.62	45.74	61.95	20.13	7.43	48.63	9.13	20.78	6.33	60.56	59.44
27	4.21	52.95	44.99	62.18	19.20	7.54	47.68	9.13	19.93	6.19	60.02	59.15
28	3.79	53.26	44.24	62.42	18.27	7.66	46.70	9.13	19.05	6.04	59.54	58.84
29	3.37	53.56	43.50	62.66	17.34	7.78	45.69	9.12	18.17	5.87	59.12	58.52
30	2.97	53.87			16.40	7.91	44.65	9.10	17.29	5.68	58.76	58.21
31	2.57	54.19			15.44	8.04	43.58	9.08	16.44	5.47	58.45	57.91
32	2.17	54.50			14.44	8.18			15.64	5.24		

Mean R.A. 7<sup>h</sup> 36<sup>m</sup> 7<sup>s</sup>.763 Mean Dec. — 88° 37' 39".22 Sec δ 41.751 Tan δ — 41.739

## 262 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

A Octantis. Mag. 7.8

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	h m		h m		h m		h m		h m		h m	
	7 34	88° 37'	7 34	88° 37'	7 35	88° 37'	7 35	88° 37'	7 35	88° 37'	7 36	88° 37'
1	58.45	57.91	54.87	48.29	6.29	39.74	28.73	34.84	56.39	35.27	18.13	41.21
2	58.18	57.62	54.96	48.02	6.84	39.49	29.63	34.73	57.32	35.39	18.71	41.50
3	57.93	57.35	55.05	47.72	7.43	39.23	30.56	34.64	58.24	35.53	19.24	41.81
4	57.65	57.10	55.15	47.42	8.07	38.99	31.51	34.57	59.12	35.68	19.72	42.12
5	57.34	56.85	55.28	47.09	8.75	38.75	32.47	34.51	59.98	35.83	20.15	42.42
6	57.00	56.59	55.45	46.77	9.46	38.52	33.43	34.46	60.80	36.00	20.53	42.71
7	56.65	56.30	55.67	46.45	10.21	38.30	34.38	34.43	61.57	36.17	20.90	42.99
8	56.30	56.00	55.93	46.12	10.95	38.09	35.32	34.41	62.31	36.34	21.28	43.27
9	55.96	55.70	56.24	45.79	11.72	37.89	36.23	34.40	63.02	36.50	21.67	43.54
10	55.67	55.38	56.58	45.48	12.48	37.71	37.10	34.39	63.72	36.66	22.10	43.80
11	55.42	55.05	56.95	45.18	13.22	37.55	37.94	34.39	64.44	36.80	22.55	44.08
12	55.21	54.72	57.34	44.89	13.94	37.39	38.76	34.39	65.19	36.94	23.01	44.38
13	55.05	54.39	57.74	44.62	14.64	37.24	39.57	34.37	65.99	37.09	23.47	44.70
14	{ 54.83 }	{ 54.07 }	58.14	44.35	15.31	37.08	40.39	34.35	66.81	37.25	23.89	45.03
15	54.78	53.45	58.51	44.08	15.97	36.91	41.24	34.32	67.63	37.43	24.26	45.38
16	54.73	53.14	58.85	43.83	16.64	36.72	42.14	34.30	68.44	37.64	24.56	45.74
17	54.69	52.84	59.17	43.57	17.32	36.54	43.08	34.29	69.22	37.86	24.80	46.09
18	54.63	52.55	59.48	43.30	18.05	36.35	44.05	34.30	69.95	38.11	25.01	46.43
19	54.55	52.27	59.79	43.02	18.84	36.17	45.03	34.34	70.61	38.36	25.19	46.76
20	54.46	51.99	60.13	42.74	19.68	36.01	45.99	34.39	71.22	38.61	25.36	47.08
21	54.34	51.70	60.51	42.44	20.56	35.86	46.91	34.46	71.81	38.84	25.54	47.40
22	54.21	51.40	60.94	42.13	21.45	35.73	47.79	34.55	72.40	39.07	25.75	47.70
23	54.08	51.08	61.44	41.84	22.31	35.63	48.63	34.64	73.00	39.28	25.97	48.00
24	54.00	50.75	61.99	41.57	23.14	35.55	49.44	34.72	73.61	39.50	26.20	48.32
25	53.98	50.41	62.57	41.31	23.95	35.46	50.24	34.79	74.24	39.71	26.43	48.64
26	54.02	50.07	63.15	41.07	24.72	35.38	51.05	34.84	74.89	39.93	26.66	48.98
27	54.12	49.74	63.72	40.85	25.48	35.29	51.88	34.90	75.56	40.15	26.87	49.32
28	54.27	49.42	64.26	40.64	26.25	35.19	52.73	34.96	76.22	40.40	27.05	49.67
29	54.43	49.12	64.78	40.44	27.05	35.08	53.62	35.02	76.87	40.66	27.20	50.04
30	54.60	48.84	65.28	40.22	27.88	34.96	54.54	35.09	77.51	40.93	27.30	50.42
31	54.75	48.57	65.78	39.98	28.73	34.84	55.47	35.17	78.13	41.21	27.35	50.80
32	54.87	48.29	66.29	39.74			56.39	35.27			27.35	51.17

Mean R.A. 7<sup>h</sup> 36<sup>m</sup> 7<sup>s</sup>.763 Mean Dec. — 88° 37' 39".22 Sec δ 41.751 Tan δ — 41.739

# APPARENT PLACES OF STARS, 1922. 263

AT UPPER TRANSIT AT GREENWICH.

10 G Octantis. Mag. 6.7

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 10 36	<sup>°</sup> <sup>'</sup> 85 41	<sup>h</sup> <sup>m</sup> 10 36	<sup>°</sup> <sup>'</sup> 85 41	<sup>h</sup> <sup>m</sup> 10 36	<sup>°</sup> <sup>'</sup> 85 41	<sup>h</sup> <sup>m</sup> 10 35	<sup>°</sup> <sup>'</sup> 85 41	<sup>h</sup> <sup>m</sup> 10 35	<sup>°</sup> <sup>'</sup> 85 41	<sup>h</sup> <sup>m</sup> 10 35	<sup>°</sup> <sup>'</sup> 85 41
1	2.04	1.70	7.32	11.39	8.29	22.05	65.31	33.30	59.13	41.66	50.71	45.86
2	2.25	1.95	7.43	11.74	8.28	22.42	65.17	33.65	58.86	41.89	50.41	45.88
3	2.47	2.19	7.54	12.10	8.27	22.79	65.02	34.00	58.58	42.10	50.12	45.88
4	2.70	2.42	7.66	12.47	8.26	23.18	64.84	34.35	58.30	42.29	49.84	45.89
5	2.93	2.66	7.77	12.85	8.23	23.58	64.64	34.69	58.02	42.46	49.59	45.91
6	3.16	2.91	7.87	13.25	8.19	23.99	64.43	35.02	57.76	42.62	49.34	45.94
7	3.39	3.18	7.95	13.66	8.12	24.41	64.22	35.32	57.50	42.78	49.09	45.98
8	3.63	3.47	8.01	14.08	8.04	24.82	64.01	35.60	57.25	42.94	48.83	46.03
9	3.86	3.79	8.05	14.48	7.96	25.21	63.81	35.88	57.02	43.11	48.56	46.07
10	4.07	4.11	8.08	14.87	7.86	25.59	63.63	36.15	56.79	43.29	48.27	46.10
11	4.27	4.45	8.11	15.24	7.75	25.95	63.46	36.44	56.55	43.48	47.99	46.12
12	4.45	4.78	8.13	15.60	7.65	26.31	63.29	36.74	56.30	43.68	47.69	46.12
13	4.61	5.11	8.17	15.95	7.56	26.65	63.12	37.05	56.04	43.88	47.38	46.10
14	4.77	5.43	8.22	16.31	7.48	27.00	62.94	37.37	55.77	44.06	47.08	46.07
15	4.92	5.73	8.27	16.67	7.42	27.36	62.75	37.68	55.48	44.22	46.78	46.03
16	5.08	6.01	8.32	17.04	7.35	27.74	62.54	37.99	55.19	44.36	46.50	45.98
17	5.24	6.29	8.38	17.44	7.28	28.12	62.32	38.29	54.89	44.49	46.23	45.91
18	5.42	6.58	8.44	17.86	7.20	28.51	62.09	38.56	54.60	44.60	45.96	45.84
19	5.61	6.89	8.47	18.27	7.10	28.91	61.86	38.83	54.32	44.70	45.71	45.77
20	5.80	7.22	8.48	18.69	6.98	29.29	61.62	39.07	54.03	44.79	45.46	45.71
21	5.98	7.58	8.48	19.10	6.84	29.67	61.38	39.31	53.76	44.88	45.22	45.66
22	6.15	7.95	8.46	19.49	6.70	30.04	61.15	39.54	53.50	44.96	44.97	45.62
23	6.31	8.32	8.44	19.88	6.56	30.38	60.92	39.76	53.24	45.04	44.72	45.58
24	6.44	8.69	8.41	20.26	6.41	30.70	60.69	39.97	52.98	45.14	44.46	45.54
25	6.57	9.04	8.38	20.61	6.26	31.02	60.48	40.19	52.73	45.24	44.19	45.49
26	6.68	9.39	8.36	20.96	6.12	31.34	60.26	40.42	52.48	45.35	43.91	45.43
27	6.79	9.74	8.34	21.32	5.98	31.65	60.04	40.66	52.21	45.46	43.62	45.35
28	6.89	10.08	8.31	21.68	5.85	31.97	59.83	40.90	51.93	45.57	43.33	45.24
29	6.99	10.41	8.29	22.05	5.72	32.29	59.61	41.14	51.64	45.67	43.04	45.12
30	7.09	10.74			5.59	32.61	59.38	41.40	51.33	45.76	42.77	44.99
31	7.20	11.06			5.45	32.95	59.13	41.66	51.02	45.82	42.52	44.85
32	7.32	11.39			5.31	33.30			50.71	45.86		

Mean R.A. 10<sup>h</sup> 35<sup>m</sup> 45<sup>s</sup>.132 Mean Dec. — 85° 41' 13".78 Sec δ 13.297 Tan δ — 13.260

## 264 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

10 G Octantis. Mag. 6.7

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>
	10 35	85 41	10 35	85 41	10 35	85 41	10 35	85 41	10 35	85 41	10 35	85 41
	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>
1	42.52	44.85	36.09	39.07	33.35	29.82	35.47	20.72	42.10	14.18	50.86	13.16
2	42.29	44.71	35.95	38.85	33.33	29.51	35.61	20.42	42.39	14.03	51.18	13.24
3	42.07	44.58	35.81	38.62	33.30	29.18	35.77	20.12	42.68	13.90	51.50	13.34
4	41.85	44.46	35.65	38.39	33.29	28.85	35.93	19.82	42.98	13.79	51.80	13.45
5	41.63	44.36	35.49	38.15	33.30	28.50	36.11	19.53	43.27	13.70	52.09	13.57
6	41.41	44.26	35.33	37.89	33.32	28.15	36.30	19.25	43.56	13.63	52.38	13.68
7	41.17	44.15	35.17	37.61	33.34	27.81	36.49	18.99	43.85	13.56	52.65	13.79
8	40.92	44.03	35.02	37.32	33.39	27.47	36.70	18.74	44.13	13.49	52.91	13.90
9	40.66	43.89	34.88	37.01	33.45	27.13	36.90	18.52	44.39	13.43	53.17	14.00
10	40.40	43.73	34.75	36.70	33.51	26.80	37.10	18.31	44.65	13.37	53.44	14.09
11	40.15	43.56	34.64	36.39	33.58	26.50	37.30	18.10	44.91	13.29	53.72	14.19
12	39.90	43.37	34.54	36.08	33.65	26.21	37.49	17.89	45.17	13.20	54.02	14.29
13	39.66	43.18	34.45	35.77	33.71	25.93	37.66	17.68	45.45	13.11	54.32	14.42
14	39.44	42.98	34.37	35.47	33.77	25.65	37.84	17.46	45.74	13.03	54.63	14.57
15	39.22	42.77	34.29	35.19	33.82	25.37	38.02	17.22	46.04	12.97	54.94	14.74
16	39.02	42.55	34.21	34.92	33.86	25.08	38.21	16.97	46.36	12.92	55.24	14.93
17	38.83	42.34	34.14	34.65	33.91	24.77	38.42	16.73	46.69	12.90	55.53	15.13
18	38.65	42.15	34.07	34.38	33.96	24.45	38.64	16.50	47.02	12.91	55.79	15.33
19	38.46	41.96	33.98	34.11	34.03	24.12	38.88	16.29	47.33	12.93	56.04	15.53
20	38.27	41.79	33.88	33.83	34.11	23.79	39.14	16.09	47.63	12.96	56.29	15.72
21	38.08	41.61	33.78	33.53	34.21	23.47	39.40	15.92	47.92	12.99	56.54	15.90
22	37.88	41.43	33.68	33.22	34.34	23.16	39.67	15.76	48.20	13.00	56.78	16.07
23	37.68	41.25	33.59	32.90	34.48	22.87	39.92	15.62	48.47	13.01	57.02	16.24
24	37.46	41.05	33.53	32.56	34.62	22.61	40.15	15.49	48.74	13.01	57.27	16.42
25	37.24	40.82	33.49	32.22	34.76	22.35	40.39	15.34	49.02	13.01	57.53	16.61
26	37.03	40.57	33.46	31.90	34.89	22.09	40.62	15.18	49.31	13.02	57.79	16.79
27	36.83	40.31	33.45	31.59	35.01	21.83	40.84	15.01	49.61	13.02	58.06	16.99
28	36.65	40.05	33.45	31.29	35.12	21.57	41.07	14.84	49.91	13.03	58.33	17.20
29	36.49	39.79	33.44	31.00	35.24	21.29	41.31	14.67	50.22	13.06	58.59	17.44
30	36.35	39.54	{ 33.42 }	{ 30.72 }	35.35	21.01	41.56	14.50	50.54	13.11	58.85	17.68
			{ 33.42 }	{ 30.43 }								
31	36.22	39.30	33.38	30.13	35.47	20.72	41.82	14.34	50.86	13.16	59.10	17.94
32	36.09	39.07	33.35	29.82			42.10	14.18			59.34	18.22

Mean R.A. 10<sup>h</sup> 35<sup>m</sup> 45<sup>s</sup>.132 Mean Dec. — 85° 41' 13".78 Sec δ 13.297 Tan δ — 13.260

# APPARENT PLACES OF STARS, 1922. 265

## AT UPPER TRANSIT AT GREENWICH.

$\eta$  Octantis. Mag. 6.3

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 11 0 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 10 59 84 10	<sup>h</sup> <sup>m</sup> <sup>s</sup> 10 59 84 10
1	5.09	13.55	9.70	22.68	11.19	33.22	9.81	44.77	5.88	53.75	60.05	58.84
2	5.27	13.75	9.81	23.01	11.20	33.58	9.73	45.14	5.71	54.00	59.83	58.89
3	5.45	13.96	9.91	23.35	11.22	33.96	9.64	45.51	5.52	54.24	59.62	58.93
4	5.63	14.18	10.02	23.71	11.24	34.35	9.53	45.88	5.32	54.47	59.42	58.97
5	5.81	14.41	10.13	24.09	11.25	34.75	9.40	46.23	5.13	54.68	59.24	59.01
6	6.00	14.64	10.24	24.48	11.25	35.17	9.27	46.57	4.95	54.87	59.05	59.07
7	6.20	14.89	10.33	24.87	11.24	35.60	9.14	46.89	4.77	55.05	58.87	59.13
8	6.40	15.15	10.41	25.27	11.21	36.01	9.01	47.20	4.60	55.24	58.69	59.21
9	6.59	15.43	10.47	25.67	11.17	36.42	8.89	47.50	4.44	55.43	58.50	59.29
10	6.77	15.73	10.52	26.06	11.11	36.80	8.77	47.79	4.28	55.64	58.31	59.36
11	6.95	16.05	10.56	26.43	11.06	37.17	8.67	48.09	4.12	55.85	58.09	59.41
12	7.11	16.37	10.61	26.80	11.01	37.54	8.57	48.40	3.96	56.07	57.87	59.44
13	7.25	16.67	10.66	27.15	10.98	37.89	8.47	48.73	3.79	56.30	57.65	59.46
14	7.39	16.97	10.72	27.49	10.95	38.25	8.36	49.07	3.60	56.51	57.43	59.46
15	7.52	17.25	10.78	27.84	10.93	38.61	8.24	49.41	3.40	56.69	57.22	59.45
16	7.65	17.52	10.85	28.21	10.91	38.99	8.11	49.74	3.20	56.86	57.01	59.42
17	7.79	17.79	10.93	28.60	10.88	39.39	7.98	50.06	3.00	57.02	56.81	59.38
18	7.95	18.08	10.99	29.01	10.85	39.79	7.83	50.36	2.79	57.16	56.60	59.34
19	8.11	18.37	11.04	29.43	10.80	40.19	7.67	50.64	2.59	57.29	56.41	59.30
20	8.27	18.68	11.08	29.84	10.74	40.58	7.51	50.92	2.39	57.41	56.22	59.27
21	8.43	19.01	11.11	30.25	10.67	40.97	7.35	51.18	2.20	57.52	56.04	59.24
22	8.59	19.35	11.13	30.64	10.60	41.35	7.19	51.43	2.01	57.63	55.86	59.22
23	8.73	19.70	11.14	31.03	10.51	41.71	7.04	51.66	1.82	57.74	55.68	59.21
24	8.87	20.06	11.15	31.41	10.42	42.06	6.89	51.90	1.64	57.87	55.50	59.21
25	8.99	20.41	11.16	31.77	10.34	42.39	6.75	52.15	1.46	58.01	55.30	59.19
26	9.09	20.75	11.16	32.13	10.25	42.72	6.61	52.39	1.29	58.15	55.08	59.16
27	9.19	21.08	11.16	32.49	10.17	43.05	6.47	52.65	1.11	58.28	54.86	59.11
28	9.30	21.41	11.17	32.85	10.09	43.38	6.33	52.92	0.92	58.42	54.65	59.04
29	9.39	21.73	11.19	33.22	10.02	43.71	6.19	53.20	0.71	58.55	54.44	58.95
30	9.49	22.05			9.95	44.05	6.04	53.48	0.49	58.66	54.23	58.85
31	9.60	22.36			9.88	44.40	5.88	53.75	0.27	58.76	54.04	58.74
32	9.70	22.68			9.81	44.77			0.05	58.84		

Mean R.A. 10<sup>h</sup> 59<sup>m</sup> 53<sup>s</sup>.418 Mean Dec. — 84° 10' 27".43 Sec  $\delta$  9.852 Tan  $\delta$  — 9.801

# 266 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

$\eta$  Octantis. Mag. 6.3

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>	<sup>h</sup> <sub>IO</sub> <sup>m</sup> <sub>59</sub> <sup>s</sup> <sub>84</sub>
1	54.04	58.74	48.99	53.69	46.45	45.12	47.37	35.52	51.82	28.31	58.26	26.40
2	53.86	58.63	48.88	53.49	46.41	44.81	47.45	35.20	52.02	28.14	58.50	26.44
3	53.69	58.53	48.75	53.28	46.37	44.50	47.54	34.88	52.22	27.98	58.74	26.51
4	53.53	58.44	48.63	53.07	46.33	44.17	47.64	34.57	52.44	27.83	58.97	26.59
5	53.36	58.36	48.50	52.84	46.29	43.83	47.76	34.27	52.66	27.71	59.21	26.68
6	53.18	58.28	48.37	52.59	{ 46.27 }	{ 43.48 }	47.88	33.98	52.88	27.60	59.42	26.77
7	53.00	58.20	48.23	52.34	46.26	42.79	48.00	33.70	53.09	27.51	59.62	26.85
8	52.82	58.11	48.10	52.06	46.27	42.46	48.13	33.43	53.29	27.42	59.83	26.93
9	52.63	57.99	47.98	51.78	46.29	42.13	48.27	33.17	53.47	27.34	60.03	27.00
10	52.43	57.86	47.86	51.49	46.32	41.80	48.40	32.93	53.66	27.24	60.23	27.06
11	52.23	57.72	47.76	51.19	46.35	41.48	48.54	32.70	53.85	27.13	60.44	27.13
12	52.04	57.56	47.66	50.89	46.38	41.19	48.66	32.48	54.04	27.02	60.66	27.20
13	51.86	57.39	47.57	50.60	46.41	40.90	48.77	32.26	54.24	26.91	60.90	27.30
14	51.68	57.21	47.50	50.31	46.44	40.62	48.89	32.03	54.45	26.80	61.14	27.42
15	51.51	57.02	47.43	50.03	46.46	40.33	49.01	31.78	54.67	26.71	61.39	27.55
16	51.35	56.83	47.36	49.76	46.47	40.04	49.13	31.52	54.90	26.63	61.63	27.71
17	51.19	56.65	47.29	49.51	46.47	39.72	49.27	31.26	55.14	26.58	61.86	27.89
18	51.05	56.48	47.21	49.25	46.49	39.39	49.42	31.00	55.38	26.55	62.08	28.07
19	50.91	56.32	47.13	48.99	46.53	39.05	49.58	30.76	55.62	26.54	62.28	28.24
20	50.76	56.16	47.05	48.72	46.57	38.72	49.76	30.54	55.85	26.53	62.47	28.40
21	50.61	56.01	46.96	48.44	46.63	38.39	49.95	30.33	56.06	26.53	62.66	28.56
22	50.46	55.86	46.86	48.14	46.70	38.07	50.13	30.15	56.27	26.52	62.85	28.71
23	50.29	55.69	46.78	47.82	46.78	37.77	50.31	29.98	56.47	26.51	63.05	28.85
24	50.12	55.51	46.71	47.49	46.86	37.49	50.48	29.82	56.68	26.48	63.25	29.00
25	49.94	55.32	46.65	47.16	46.95	37.21	50.64	29.65	56.88	26.44	63.45	29.15
26	49.77	55.11	46.62	46.84	47.03	36.95	50.79	29.47	57.09	26.41	63.65	29.32
27	49.62	54.87	46.59	46.53	47.10	36.68	50.95	29.29	57.32	26.39	63.86	29.49
28	49.48	54.61	46.56	46.24	47.17	36.41	51.11	29.11	57.54	26.37	64.08	29.67
29	49.34	54.36	46.54	45.97	47.24	36.13	51.28	28.90	57.78	26.37	64.30	29.88
30	49.21	54.13	46.51	45.69	47.30	35.83	51.45	28.70	58.01	26.38	64.51	30.10
31	49.09	53.90	46.48	45.41	47.37	35.52	51.63	28.50	58.26	26.40	64.71	30.34
32	48.99	53.69	46.45	45.12			51.82	28.31			64.91	30.59

Mean R.A.  $10^h 59^m 53^s 41.8$  Mean Dec.  $- 84^\circ 10' 27''.43$  See  $\delta 9.852$  Tan  $\delta - 9.801$



# APPARENT PLACES OF STARS, 1922. 267

AT UPPER TRANSIT AT GREENWICH.

$\rho$  Octantis. Mag. 5.7

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	h m	$^{\circ}$	h m	$^{\circ}$	h m	$^{\circ}$	h m	$^{\circ}$	h m	$^{\circ}$	h m	$^{\circ}$
	15 24	84 12	15 25	84 12	15 25	84 12	15 25	84 12	15 25	84 12	15 25	84 12
	s	s	s	s	s	s	s	s	s	s	s	s
1	59.98	11.49	7.31	9.44	14.28	12.00	20.82	18.81	24.88	28.00	25.98	38.27
2	60.17	11.35	7.55	9.42	14.51	12.13	21.01	19.07	24.98	28.36	25.93	38.59
3	60.37	11.21	7.81	9.42	14.75	12.27	21.20	19.36	25.06	28.73	25.89	38.89
4	60.57	11.06	8.07	9.42	15.00	12.42	21.39	19.67	25.13	29.10	25.85	39.17
5	60.77	10.91	8.34	9.44	15.25	12.59	21.57	19.99	25.19	29.45	25.81	39.45
6	60.98	10.75	8.62	9.49	15.51	12.77	21.73	20.31	25.23	29.78	25.79	39.73
7	61.21	10.60	8.90	9.55	15.76	12.97	21.87	20.63	25.28	30.09	25.78	40.01
8	61.45	10.47	9.17	9.63	16.01	13.20	22.00	20.94	25.34	30.39	25.77	40.30
9	61.71	10.35	9.45	9.73	16.24	13.43	22.14	21.23	25.40	30.69	25.74	40.61
10	61.97	10.24	9.70	9.84	16.45	13.66	22.28	21.51	25.48	31.00	25.71	40.93
11	62.23	10.16	9.93	9.94	16.65	13.88	22.42	21.78	25.56	31.31	25.67	41.26
12	62.48	10.10	10.17	10.03	16.85	14.10	22.58	22.04	25.64	31.63	25.62	41.58
13	62.72	10.05	10.40	10.11	17.05	14.30	22.74	22.31	25.71	31.97	25.55	41.89
14	62.96	10.00	10.63	10.18	17.26	14.49	22.91	22.60	25.78	32.33	25.47	42.20
15	63.18	9.95	10.87	10.24	17.47	14.68	23.07	22.91	25.83	32.69	25.39	42.50
16	63.39	9.89	11.12	10.30	17.69	14.87	23.23	23.24	25.86	33.05	25.30	42.77
17	63.61	9.81	11.39	10.37	17.92	15.06	23.38	23.57	25.89	33.40	25.21	43.03
18	63.83	9.73	11.67	10.46	18.16	15.28	23.51	23.92	25.90	33.74	25.12	43.29
19	64.07	9.65	11.94	10.57	18.39	15.52	23.63	24.25	25.91	34.06	25.03	43.54
20	64.33	9.56	12.21	10.70	18.62	15.78	23.74	24.58	25.91	34.38	24.95	43.78
21	64.60	9.48	12.47	10.84	18.83	16.05	23.84	24.90	25.91	34.70	24.87	44.02
22	64.87	9.43	12.73	11.00	19.03	16.32	23.94	25.21	25.92	35.01	24.80	44.28
23	65.14	9.41	12.96	11.16	19.21	16.59	24.02	25.52	25.92	35.31	24.73	44.54
24	65.41	9.40	13.18	11.31	19.39	16.85	24.11	25.82	25.93	35.60	24.67	44.81
25	65.67	9.40	13.40	11.46	19.56	17.11	24.21	26.12	25.95	35.89	24.61	45.10
26	65.91	9.41	13.62	11.60	19.73	17.35	24.32	26.41	25.98	36.20	24.52	45.40
27	66.16	9.42	13.83	11.74	19.90	17.59	24.43	26.71	26.01	36.53	24.41	45.68
28	66.39	9.43	14.05	11.87	20.07	17.83	24.54	27.01	26.03	36.87	24.29	45.96
29	66.62	9.43	14.28	12.00	20.25	18.07	24.65	27.33	26.04	37.22	24.16	46.21
30	66.85	9.43			20.43	18.31	24.77	27.66	26.04	37.58	24.02	46.45
31	67.08	9.43			20.62	18.56	24.88	28.00	26.02	37.93	23.89	46.67
32	67.31	9.44			20.82	18.81			25.98	38.27		

Mean R.A. 15<sup>h</sup> 25<sup>m</sup> 3<sup>s</sup>.593 Mean Dec. — 84° 12' 32".89 Sec  $\delta$  9.911 Tan  $\delta$  — 9.860

## 268 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

 $\rho$  Octantis. Mag. 5.7

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>
	15 25	84 12	15 25	84 12	15 25	84 12	15 25	84 12	15 25	84 12	15 25	84 12
	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>
1	23.89	46.67	19.18	51.76	13.19	51.97	8.02	47.20	5.33	38.53	6.69	29.05
2	23.76	46.87	19.03	51.84	13.01	51.92	7.86	46.98	5.29	38.19	6.81	28.76
3	23.64	47.06	18.86	51.93	12.81	51.85	7.71	46.74	5.26	37.85	6.95	28.48
4	23.54	47.26	18.69	52.03	12.59	51.77	7.55	46.49	5.25	37.51	7.09	28.20
5	23.45	47.47	18.51	52.14	12.38	51.68	7.40	46.22	5.25	37.18	7.23	27.95
6	23.34	47.70	18.31	52.24	12.17	51.56	7.26	45.94	5.27	36.86	7.38	27.72
7	23.23	47.93	18.11	52.33	11.95	51.43	7.13	45.66	5.29	36.53	7.52	27.49
8	23.11	48.16	17.90	52.39	11.74	51.29	7.01	45.38	5.32	36.23	7.65	27.27
9	22.98	48.39	17.69	52.43	11.54	51.14	6.91	45.10	5.35	35.94	7.77	27.04
10	22.84	48.61	17.47	52.47	11.36	50.98	6.82	44.82	5.37	35.66	7.88	26.80
11	22.68	48.82	17.25	52.50	11.18	50.82	6.73	44.54	5.39	35.39	8.01	26.54
12	22.52	49.02	17.04	52.51	11.00	50.66	6.65	44.28	5.39	35.11	8.14	26.27
13	22.36	49.21	16.84	52.51	10.84	50.50	6.57	44.04	5.40	34.82	8.28	26.00
14	22.18	49.38	16.63	52.50	10.69	50.36	6.48	43.81	5.40	34.51	8.45	25.74
15	22.01	49.54	16.44	52.49	10.54	50.23	6.37	43.56	5.42	34.18	8.63	25.48
16	21.85	49.69	16.26	52.49	10.38	50.10	6.26	43.31	{ 5.45 }	{ 33.84 }	8.82	25.25
17	21.69	49.83	16.09	52.50	10.21	49.97	6.15	43.04	5.49	33.55	9.02	25.04
18	21.53	49.96	15.92	52.51	10.03	49.83	6.05	42.74	5.56	33.16	9.22	24.85
19	21.38	50.10	15.74	52.52	9.84	49.67	5.96	42.43	5.64	32.83	9.40	24.66
20	21.24	50.25	15.55	52.55	9.64	49.50	5.89	42.11	5.73	32.53	9.58	24.48
21	21.11	50.41	15.35	52.57	9.45	49.31	5.83	41.79	5.82	32.25	9.75	24.30
22	20.96	50.57	15.14	52.58	9.28	49.09	5.78	41.47	5.91	31.98	9.91	24.12
23	20.81	50.74	14.92	52.56	9.12	48.86	5.75	41.17	5.98	31.71	10.07	23.92
24	20.65	50.92	14.70	52.53	8.98	48.63	5.72	40.88	6.05	31.44	10.24	23.72
25	20.47	51.08	14.48	52.47	8.84	48.42	5.68	40.60	6.12	31.17	10.41	23.51
26	20.28	51.24	14.28	52.39	8.72	48.21	5.64	40.33	6.18	30.88	10.59	23.31
27	20.08	51.37	14.09	52.31	8.60	48.01	5.60	40.06	6.25	30.59	10.78	23.12
28	19.88	51.47	13.90	52.22	8.47	47.81	5.55	39.78	6.31	30.29	10.98	22.92
29	19.69	51.55	13.72	52.15	8.33	47.61	5.49	39.48	6.39	29.98	11.19	22.72
30	19.51	51.62	13.56	52.08	8.18	47.41	5.43	39.17	6.48	29.67	11.41	22.54
31	19.34	51.69	13.38	52.03	8.02	47.20	5.38	38.86	6.58	29.36	11.64	22.38
32	19.18	51.76	13.19	51.97			5.33	38.53	6.69	29.05	11.88	22.24

Mean R.A. 15<sup>h</sup> 25<sup>m</sup> 3<sup>s</sup>.593 Mean Dec. — 84° 12' 32".89 Sec  $\delta$  9.911 Tan  $\delta$  — 9.860

# APPARENT PLACES OF STARS, 1922. 269

AT UPPER TRANSIT AT GREENWICH.

$\sigma$  Octantis. Mag. 5.5

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	h m	<sup>°</sup>	h m	<sup>°</sup>	h m	<sup>°</sup>	h m	<sup>°</sup>	h m	<sup>°</sup>	h m	<sup>°</sup>
	19 33	89 12	19 33	89 12	19 34	89 12	19 35	89 12	19 36	89 12	19 37	89 12
	<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>	
1	43.90	45.06	57.74	34.17	31.21	26.22	22.02	20.83	15.57	19.96	4.16	23.70
2	43.87	44.73	58.48	33.84	32.53	25.97	23.87	20.70	17.47	20.02	5.42	23.92
3	43.82	44.41	59.27	33.50	33.91	25.72	25.79	20.60	19.33	20.09	6.58	24.13
4	43.76	44.09	60.14	33.16	35.37	25.46	27.75	20.51	21.11	20.18	7.70	24.32
5	43.69	43.75	61.10	32.82	36.93	25.21	29.71	20.44	22.79	20.27	8.82	24.50
6	43.64	43.40	62.18	32.48	38.58	24.96	31.63	20.39	24.39	20.37	9.97	24.67
7	43.63	43.04	63.36	32.15	40.30	24.74	33.46	20.35	25.92	20.45	11.17	24.85
8	43.69	42.67	64.60	31.83	42.06	24.53	35.21	20.31	27.43	20.52	12.44	25.03
9	43.85	42.29	65.87	31.54	43.80	24.34	36.89	20.27	28.97	20.57	13.76	25.23
10	44.12	41.90	67.12	31.27	45.49	24.17	38.53	20.21	30.55	20.63	15.08	25.44
11	44.51	41.52	68.32	31.00	47.11	24.01	40.18	20.14	32.21	20.70	16.37	25.66
12	<sup>44.99</sup> <sub>45.33</sub>	<sup>41.16</sup> <sub>40.82</sub>	69.43	30.73	48.65	23.85	41.87	20.06	33.94	20.78	17.60	25.90
13	46.07	40.49	70.49	30.46	50.14	23.67	43.64	19.98	35.70	20.86	18.76	26.15
14	46.57	40.17	71.52	30.18	51.62	23.47	45.49	19.91	37.45	20.95	19.84	26.40
15	47.01	39.85	72.55	29.88	53.13	23.27	47.39	19.85	39.16	21.07	20.84	26.66
16	47.39	39.53	73.65	29.56	54.70	23.06	49.32	19.81	40.83	21.20	21.78	26.92
17	47.72	39.19	74.84	29.24	56.37	22.85	51.24	19.78	42.43	21.34	22.66	27.18
18	48.05	38.85	76.13	28.93	58.12	22.65	53.13	19.77	43.95	21.49	23.51	27.43
19	48.42	38.49	77.50	28.63	59.93	22.48	54.97	19.78	45.41	21.65	24.33	27.67
20	48.87	38.11	78.93	28.35	61.76	22.31	56.76	19.79	46.83	21.80	25.16	27.90
21	49.42	37.74	80.38	28.08	63.58	22.17	58.49	19.82	48.20	21.96	26.01	28.14
22	50.09	37.38	81.83	27.84	65.38	22.04	60.17	19.85	49.54	22.10	26.90	28.37
23	50.83	37.02	83.26	27.60	67.12	21.92	61.81	19.87	50.88	22.24	27.85	28.60
24	51.63	36.67	84.65	27.37	68.82	21.81	63.42	19.88	52.24	22.37	28.85	28.84
25	52.44	36.33	86.00	27.15	70.49	21.70	65.03	19.89	53.65	22.49	29.86	29.09
26	53.26	36.02	87.32	26.92	72.12	21.59	66.65	19.90	55.12	22.62	30.86	29.36
27	54.06	35.71	88.62	26.69	73.72	21.47	68.31	19.91	56.64	22.76	31.79	29.66
28	54.83	35.40	89.91	26.46	75.31	21.35	70.03	19.91	58.21	22.91	32.62	29.96
29	55.57	35.10	91.21	26.22	76.92	21.22	71.82	19.91	59.78	23.08	33.32	30.27
30	56.30	34.79			78.56	21.09	73.68	19.93	61.32	23.27	33.92	30.57
31	57.02	34.48			80.25	20.96	75.57	19.96	62.79	23.48	34.45	30.86
32	57.74	34.17			82.02	20.83			64.16	23.70		

Mean R.A. 19<sup>h</sup> 35<sup>m</sup> 29<sup>s</sup>.770 Mean Dec. — 89° 12' 49".57 Sec  $\delta$  72.876 Tan  $\delta$  — 72.869

# 270 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

$\sigma$  Octantis. Mag. 5.5

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup>
	19 37	89 12	19 37	89 12	19 36	89 12	19 35	89 12	19 35	89 12	19 35	89 12
	<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>	
1	34.45	30.86	41.81	40.02	83.34	48.58	105.04	53.57	57.16	53.33	19.61	47.59
2	34.94	31.13	41.68	40.30	82.45	48.82	103.51	53.68	55.54	53.23	18.60	47.30
3	35.45	31.39	41.57	40.59	81.48	49.07	101.91	53.79	53.93	53.10	17.67	47.01
4	36.00	31.64	41.46	40.89	80.42	49.31	100.28	53.87	52.35	52.96	16.84	46.71
5	36.60	31.90	41.31	41.20	79.28	49.56	98.61	53.94	50.83	52.81	16.10	46.41
6	37.24	32.16	41.09	41.52	78.08	49.80	96.92	54.00	49.39	52.65	15.43	46.12
7	37.90	32.44	40.79	41.85	76.83	50.03	95.25	54.04	48.03	52.49	14.82	45.84
8	38.55	32.73	40.40	42.17	75.54	50.25	93.60	54.07	46.76	52.32	14.22	45.57
9	39.14	33.03	39.93	42.49	74.22	50.44	92.00	54.08	45.54	52.16	13.59	45.31
10	39.66	33.34	39.40	42.80	72.89	50.62	90.45	54.09	44.34	52.01	12.90	45.05
11	40.10	33.67	38.81	43.10	71.59	50.79	88.98	54.10	43.12	51.87	12.16	44.78
12	40.46	34.00	38.16	43.39	70.33	50.95	87.57	54.10	41.85	51.73	11.37	44.50
13	40.73	34.32	37.50	43.68	69.13	51.10	86.18	54.11	40.52	51.59	10.59	44.20
14	40.93	34.64	36.84	43.96	67.98	51.26	84.78	54.13	39.12	51.44	9.85	43.87
15	41.09	34.94	36.21	44.22	66.87	51.43	83.34	54.16	37.69	51.27	9.20	43.53
16	41.22	35.24	35.62	44.47	65.77	51.61	81.82	54.20	36.27	51.08	8.67	43.17
17	41.33	35.53	35.08	44.72	64.62	51.80	80.22	54.22	34.90	50.86	8.25	42.81
18	41.45	35.81	34.58	44.99	63.39	51.99	78.55	54.22	33.62	50.62	7.91	42.47
19	41.61	36.09	34.09	45.27	62.06	52.19	76.85	54.20	32.45	50.37	7.63	42.15
20	41.82	36.37	33.57	45.55	60.63	52.37	75.15	54.15	31.38	50.13	7.39	41.83
21	42.07	36.66	33.00	45.84	59.13	52.53	73.52	54.08	30.37	49.89	7.13	41.53
22	42.35	36.94	32.32	46.14	57.60	52.66	71.96	54.00	29.39	49.66	6.82	41.22
23	42.63	37.25	31.52	46.44	56.08	52.76	70.48	53.91	28.40	49.45	6.47	40.92
24	42.85	37.57	30.62	46.72	54.60	52.85	69.07	53.84	27.39	49.25	6.11	40.62
25	42.99	37.90	29.65	46.99	53.19	52.94	67.70	53.78	26.33	49.06	5.73	40.31
26	43.01	38.24	28.65	47.23	51.85	53.02	66.32	53.72	25.22	48.85	5.34	39.97
27	42.92	38.58	27.67	47.45	50.54	53.11	64.92	53.67	24.08	48.63	4.98	39.64
28	42.73	38.90	26.73	47.66	49.23	53.21	63.47	53.61	22.94	48.39	4.66	39.29
29	42.48	39.19	25.85	47.87	47.89	53.33	61.95	53.55	21.80	48.13	4.41	38.93
30	42.22	39.47	25.02	48.09	46.50	53.45	60.38	53.49	20.69	47.86	4.22	38.57
31	41.99	39.74	24.19	48.33	45.04	53.57	58.78	53.41	19.61	47.59	4.13	38.20
32	41.81	40.02	23.34	48.58			57.16	53.33			4.15	37.83

Mean R.A. 19<sup>h</sup> 35<sup>m</sup> 29<sup>s</sup>.770 Mean Dec. — 89° 12' 49".57 Sec  $\delta$  72.876 Tan  $\delta$  — 72.869

# APPARENT PLACES OF STARS, 1922. 271

## AT UPPER TRANSIT AT GREENWICH.

44 G Octantis. Mag. 6.3

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	h m	s	h m	s	h m	s	h m	s	h m	s	h m	s
	19 41	81 32	19 41	81 32	19 41	81 32	19 41	81 32	19 41	81 32	19 41	81 32
1	34.25	50.81	35.61	40.50	38.80	32.69	43.64	27.10	48.84	25.69	53.69	28.69
2	34.25	50.51	35.68	40.19	38.93	32.45	43.82	26.97	49.03	25.73	53.81	28.88
3	34.24	50.20	35.76	39.87	39.06	32.20	44.01	26.84	49.21	25.78	53.92	29.07
4	34.24	49.90	35.84	39.54	39.20	31.94	44.21	26.73	49.39	25.84	54.03	29.24
5	34.23	49.59	35.93	39.20	39.34	31.68	44.40	26.64	49.55	25.91	54.15	29.40
6	34.22	49.27	36.04	38.87	39.50	31.43	44.58	26.58	49.71	25.99	54.27	29.55
7	34.23	48.93	36.16	38.54	39.67	31.20	44.75	26.53	49.87	26.06	54.40	29.69
8	34.24	48.57	36.28	38.22	39.85	30.99	44.92	26.47	50.01	26.11	54.53	29.84
9	34.25	48.21	36.41	37.92	40.02	30.80	45.08	26.41	50.16	26.15	54.66	30.01
10	34.29	47.85	36.53	37.65	40.18	30.62	45.24	26.34	50.31	26.18	54.80	30.18
11	34.34	47.49	36.65	37.40	40.33	30.46	45.39	26.25	50.47	26.21	54.94	30.38
12	34.39	47.14	36.75	37.15	40.47	30.29	45.55	26.15	50.64	26.26	55.07	30.60
13	{ 34.44 34.49 }	{ 46.81 46.50 }	36.85	36.88	40.60	30.10	45.73	26.05	50.82	26.31	55.19	30.82
14	34.55	46.20	36.94	36.61	40.74	29.90	45.91	25.96	51.00	26.38	55.30	31.06
15	34.59	45.90	37.03	36.32	40.89	29.69	46.09	25.89	51.17	26.47	55.40	31.30
16	34.62	45.60	37.14	36.01	41.04	29.48	46.29	25.83	51.34	26.58	55.49	31.53
17	34.65	45.30	37.26	35.70	41.20	29.26	46.48	25.79	51.50	26.70	55.58	31.77
18	34.68	44.97	37.38	35.39	41.37	29.06	46.66	25.76	51.66	26.83	55.66	32.00
19	34.71	44.62	37.51	35.09	41.54	28.88	46.84	25.75	51.80	26.96	55.74	32.22
20	34.76	44.27	37.65	34.81	41.72	28.70	47.02	25.76	51.94	27.10	55.83	32.43
21	34.82	43.90	37.79	34.55	41.89	28.55	47.18	25.77	52.07	27.22	55.93	32.63
22	34.89	43.55	37.93	34.30	42.07	28.41	47.34	25.77	52.20	27.34	56.03	32.82
23	34.96	43.21	38.07	34.07	42.23	28.28	47.50	25.77	52.33	27.45	56.13	33.03
24	35.04	42.88	38.20	33.84	42.39	28.16	47.65	25.77	52.47	27.55	56.24	33.25
25	35.13	42.56	38.33	33.62	42.55	28.04	47.80	25.75	52.62	27.66	56.35	33.48
26	35.21	42.26	38.45	33.40	42.71	27.92	47.96	25.74	52.76	27.77	56.46	33.73
27	35.28	41.96	38.56	33.17	42.85	27.79	48.12	25.72	52.91	27.88	56.56	33.99
28	35.35	41.67	38.68	32.93	43.00	27.67	48.29	25.70	53.07	28.00	56.65	34.27
29	35.42	41.38	38.80	32.69	43.14	27.54	48.46	25.68	53.24	28.14	56.73	34.56
30	35.49	41.09			43.30	27.39	48.65	25.68	53.40	28.30	56.80	34.84
31	35.55	40.80			43.47	27.24	48.84	25.69	53.55	28.49	56.85	35.10
32	35.61	40.50			43.64	27.10			53.69	28.69		

# 272 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

44 G Octantis. Mag. 6.3

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup> <sup>"</sup>
	19 41	81 32	19 41	81 32	19 41	81 32	19 41	81 32	19 41	81 32	19 41	81 32
1	56.85	35.10	57.84	43.63	56.38	51.81	52.99	56.84	48.67	57.08	45.30	52.05
2	56.90	35.35	57.84	43.89	56.30	52.05	52.84	56.96	48.51	56.99	45.21	51.79
3	56.96	35.59	57.85	44.15	56.22	52.30	52.70	57.08	48.36	56.89	45.13	51.52
4	57.02	35.81	57.86	44.44	56.13	52.55	52.56	57.18	48.22	56.77	45.06	51.24
5	57.08	36.03	57.85	44.73	56.03	52.79	52.40	57.26	48.08	56.64	45.00	50.97
6	57.15	36.28	57.84	45.04	55.93	53.02	52.24	57.33	47.95	56.50	44.95	50.70
7	57.23	36.54	57.82	45.34	55.81	53.25	52.08	57.39	47.83	56.35	44.90	50.44
8	57.31	36.81	57.79	45.65	55.69	53.47	51.93	57.44	47.72	56.21	44.84	50.20
9	57.39	37.09	57.75	45.96	55.57	53.67	51.79	57.47	47.62	56.07	44.79	49.96
10	57.45	37.38	57.71	46.27	55.46	53.85	51.65	57.48	47.52	55.94	44.73	49.73
11	57.50	37.68	57.66	46.56	55.34	54.02	51.52	57.49	47.41	55.83	44.66	49.49
12	57.54	37.99	57.60	46.84	55.23	54.18	51.40	57.51	47.30	55.72	44.59	49.23
13	57.57	38.29	57.54	47.11	55.12	54.33	51.28	57.54	47.18	55.61	44.52	48.95
14	57.59	38.59	57.49	47.36	55.02	54.49	51.16	57.58	47.05	55.48	44.45	48.65
15	57.61	38.88	57.45	47.60	54.93	54.66	51.03	57.63	46.91	55.33	44.39	48.34
16	57.63	39.16	57.40	47.84	54.83	54.84	50.89	57.68	46.78	55.15	44.35	48.01
17	57.65	39.43	57.36	48.09	54.73	55.03	50.74	57.71	46.66	54.96	44.32	47.68
18	57.67	39.69	57.32	48.34	54.62	55.22	50.59	57.73	46.55	54.75	44.30	47.36
19	57.70	39.94	57.28	48.61	54.50	55.42	50.43	57.72	46.45	54.53	44.28	47.05
20	57.73	40.20	57.24	48.88	54.37	55.60	50.28	57.69	46.35	54.31	44.27	46.76
21	57.76	40.45	57.20	49.17	54.24	55.76	50.13	57.64	46.26	54.10	44.26	46.48
22	57.80	40.73	57.15	49.47	54.10	55.89	49.99	57.57	46.18	53.90	44.23	46.21
23	57.85	41.01	57.08	49.76	53.97	56.01	49.86	57.50	46.10	53.71	44.20	45.93
24	57.89	41.32	57.00	50.03	53.84	56.10	49.74	57.44	46.01	53.53	44.17	45.64
25	57.91	41.64	56.91	50.28	53.71	56.19	49.62	57.39	45.91	53.35	44.14	45.35
26	57.92	41.96	56.83	50.52	53.59	56.28	49.50	57.35	45.81	53.17	44.10	45.06
27	57.92	42.27	56.75	50.74	53.47	56.38	49.38	57.31	45.71	52.97	44.06	44.75
28	57.91	42.57	56.67	50.94	53.36	56.49	49.24	57.27	45.61	52.76	44.03	44.44
29	57.89	42.86	56.59	51.15	53.25	56.61	49.11	57.23	45.50	52.53	44.01	44.10
30	57.87	43.13	56.52	51.36	53.13	56.73	48.96	57.19	45.40	52.30	44.00	43.76
31	57.85	43.39	56.45	51.58	52.99	56.84	48.82	57.14	45.30	52.05	44.00	43.41
32	57.84	43.63	56.38	51.81			48.67	57.08			44.01	43.06

Mean R.A. 19<sup>h</sup> 41<sup>m</sup> 43<sup>s</sup>.924 Mean Dec. — 81° 32' 54".51 Sec δ 6.804 Tan δ — 6.730

# APPARENT PLACES OF STARS, 1922. 273

## AT UPPER TRANSIT AT GREENWICH.

48 G Octantis. Mag. 7.1

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>
	20 23	84 40	20 23	84 40	20 24	84 40	20 24	84 40	20 24	84 40	20 24	84 40
1	<sup>s</sup> 58.90	32.70	<sup>s</sup> 59.40	21.85	<sup>s</sup> 3.18	12.79	<sup>s</sup> 9.88	5.35	<sup>s</sup> 17.74	2.04	<sup>s</sup> 25.60	3.32
2	58.83	32.42	59.46	21.50	3.34	12.50	10.14	5.14	18.03	2.00	25.82	3.47
3	58.77	32.12	59.53	21.15	3.50	12.21	10.42	4.95	18.32	1.99	26.03	3.62
4	58.71	31.81	59.60	20.79	3.68	11.90	10.70	4.78	18.60	2.00	26.22	3.76
5	58.65	31.50	59.70	20.42	3.87	11.58	10.98	4.62	18.86	2.01	26.42	3.88
6	58.59	31.17	59.81	20.04	4.09	11.27	11.25	4.48	19.11	2.02	26.62	3.99
7	58.55	30.83	59.94	19.67	4.32	10.97	11.52	4.36	19.35	2.03	26.83	4.10
8	58.51	30.47	60.08	19.32	4.55	10.70	11.78	4.24	19.58	2.03	27.06	4.21
9	58.48	30.10	60.24	18.99	4.78	10.45	12.01	4.13	19.83	2.01	27.29	4.33
10	58.47	29.73	60.39	18.67	5.00	10.22	12.25	4.00	20.08	1.99	27.52	4.46
11	58.48	29.36	60.52	18.36	5.21	9.99	12.49	3.85	20.34	1.96	27.76	4.62
12	58.50	29.00	60.64	18.06	5.41	9.76	12.73	3.69	20.60	1.94	27.98	4.79
13	58.54	28.66	60.76	17.76	5.60	9.52	12.97	3.54	20.88	1.94	28.19	4.97
14	58.58	28.33	60.87	17.44	5.78	9.27	13.23	3.38	21.17	1.96	28.39	5.17
15	58.61	28.01	60.97	17.10	5.98	9.01	13.51	3.23	21.45	1.99	28.58	5.38
16	58.63	27.69	61.09	16.76	6.19	8.73	13.80	3.11	21.71	2.04	28.77	5.59
17	58.63	27.38	61.21	16.41	6.40	8.46	14.09	2.99	21.97	2.11	28.94	5.79
18	58.63	27.05	61.36	16.06	6.63	8.19	14.37	2.90	22.22	2.19	29.10	5.98
19	58.63	26.70	61.53	15.71	6.87	7.93	14.64	2.83	22.46	2.26	29.26	6.17
20	58.63	26.33	61.70	15.37	7.12	7.69	14.91	2.77	22.69	2.33	29.42	6.35
21	58.64	25.95	61.87	15.06	7.37	7.47	15.17	2.71	22.92	2.41	29.59	6.53
22	58.68	25.57	62.05	14.75	7.62	7.27	15.41	2.66	23.14	2.49	29.77	6.70
23	{ 58.73 } { 58.79 }	{ 25.20 } { 24.83 }	62.22	14.46	7.86	7.07	15.66	2.60	23.37	2.56	29.95	6.88
24	58.86	24.47	62.39	14.18	8.09	6.89	15.90	2.54	23.59	2.61	30.14	7.06
25	58.93	24.11	62.56	13.91	8.32	6.71	16.15	2.47	23.82	2.66	30.34	7.26
26	59.01	23.77	62.72	13.64	8.54	6.54	16.39	2.40	24.06	2.71	30.53	7.48
27	59.09	23.45	62.87	13.36	8.76	6.36	16.64	2.32	24.31	2.77	30.72	7.71
28	59.16	23.13	63.03	13.07	8.98	6.16	16.89	2.24	24.58	2.85	30.89	7.96
29	59.22	22.82	63.18	12.79	9.19	5.97	17.16	2.16	24.85	2.95	31.05	8.23
30	59.28	22.50			9.41	5.76	17.44	2.09	25.11	3.05	31.18	8.49
31	59.34	22.17			9.64	5.56	17.74	2.04	25.36	3.18	31.31	8.73
32	59.40	21.85			9.88	5.35			25.60	3.32		

Mean R.A. 20<sup>h</sup> 24<sup>m</sup> 14<sup>s</sup>.606 Mean Dec. — 84° 40' 32".37 Sec  $\delta$  10.777 Tan  $\delta$  — 10.731  
18—22 (NAUTICAL ALMANAC, 1922.) T

## 274 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

48 G Octantis. Mag. 7.1

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	h m	°	h m	°	h m	°	h m	°	h m	°	h m	°
	20 24	84 40	20 24	84 40	20 24	84 40	20 24	84 40	20 24	84 40	20 24	84 40
	s	s	s	s	s	s	s	s	s	s	s	s
1	31.31	8.73	33.95	17.08	32.70	25.96	28.03	32.42	21.20	34.36	15.11	30.65
2	31.42	8.96	33.98	17.34	32.61	26.24	27.83	32.59	20.96	34.33	14.93	30.43
3	31.54	9.18	34.02	17.61	32.51	26.52	27.61	32.76	20.71	34.28	14.76	30.20
4	31.67	9.39	34.05	17.89	32.40	26.81	27.38	32.92	20.47	34.22	14.60	29.95
5	31.80	9.60	34.08	18.19	32.28	27.10	27.15	33.07	20.23	34.15	14.45	29.70
6	31.94	9.82	34.10	18.51	32.14	27.38	26.91	33.19	20.01	34.06	14.33	29.45
7	32.09	10.05	34.11	18.84	31.99	27.65	26.68	33.30	19.79	33.96	14.21	29.22
8	32.24	10.30	34.11	19.16	31.84	27.91	26.45	33.40	19.59	33.86	14.09	28.99
9	32.38	10.57	34.09	19.49	31.67	28.15	26.23	33.49	19.40	33.77	13.97	28.78
10	32.51	10.85	34.06	19.81	31.51	28.39	26.02	33.56	19.22	33.69	13.83	28.57
11	32.63	11.14	34.02	20.11	31.35	28.61	25.81	33.63	19.03	33.62	13.69	28.35
12	32.74	11.43	33.97	20.42	31.20	28.82	25.61	33.70	18.83	33.55	13.54	28.12
13	32.82	11.72	33.92	20.72	31.05	29.02	25.43	33.78	18.62	33.48	13.38	27.86
14	32.90	12.01	33.87	21.00	30.92	29.22	25.24	33.87	18.39	33.39	13.24	27.59
15	32.98	12.30	33.82	21.27	30.80	29.42	25.04	33.96	18.16	33.29	13.10	27.30
16	33.04	12.57	33.78	21.53	30.67	29.63	24.83	34.06	17.93	33.17	12.98	26.99
17	33.11	12.84	33.75	21.80	30.53	29.86	24.59	34.15	17.71	33.02	12.88	26.68
18	33.17	13.10	33.72	22.07	30.38	30.10	24.35	34.22	17.50	32.86	12.79	26.37
19	33.24	13.35	33.70	22.35	30.22	30.35	24.11	34.28	17.30	32.68	12.71	26.08
20	33.33	13.60	33.67	22.64	30.04	30.58	23.86	34.31	17.12	32.49	12.64	25.79
21	33.42	13.85	33.64	22.95	29.85	30.79	23.62	34.33	16.94	32.32	12.57	25.51
22	33.51	14.11	33.60	23.27	29.65	30.98	23.38	34.32	16.78	32.16	12.49	25.25
23	33.60	14.40	33.53	23.59	29.45	31.16	23.17	34.31	16.61	32.01	12.40	24.98
24	33.69	14.70	33.44	23.89	29.25	31.31	22.96	34.29	16.44	31.86	12.30	24.71
25	33.77	15.01	33.34	24.18	29.07	31.45	22.77	34.30	16.27	31.72	12.20	24.43
26	33.83	15.33	33.23	24.45	28.89	31.59	22.57	34.30	16.09	31.57	12.10	24.15
27	33.87	15.65	33.13	24.71	28.72	31.74	22.37	34.31	15.89	31.41	12.00	23.85
28	33.89	15.97	33.03	24.96	28.56	31.89	22.15	34.33	15.69	31.24	11.90	23.53
29	33.91	16.27	32.94	25.20	28.39	32.06	21.92	34.35	15.50	31.06	11.82	23.21
30	33.91	16.56	32.86	25.44	28.22	32.24	21.69	34.36	15.30	30.86	11.75	22.87
31	33.92	16.82	32.78	25.69	28.03	32.42	21.45	34.37	15.11	30.65	11.69	22.52
32	33.95	17.08	32.70	25.96			21.20	34.36			11.65	22.17

Mean R.A. 20<sup>h</sup> 24<sup>m</sup> 14<sup>s</sup>.606 Mean Dec. — 84° 40' 32".37 Sec δ 10.777 Tan δ — 10.731



# APPARENT PLACES OF STARS, 1922. 275

AT UPPER TRANSIT AT GREENWICH.

$\nu$  Octantis. Mag. 5.7

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 22 16	<sup>°</sup> <sup>'</sup> 86 21	<sup>h</sup> <sup>m</sup> 22 16	<sup>°</sup> <sup>'</sup> 86 21	<sup>h</sup> <sup>m</sup> 22 16	<sup>°</sup> <sup>'</sup> 86 21	<sup>h</sup> <sup>m</sup> 22 16	<sup>°</sup> <sup>'</sup> 86 21	<sup>h</sup> <sup>m</sup> 22 16	<sup>°</sup> <sup>'</sup> 86 21	<sup>h</sup> <sup>m</sup> 22 17	<sup>°</sup> <sup>'</sup> 86 21
1	<sup>s</sup> 49.53	67.38	<sup>s</sup> 44.63	57.86	<sup>s</sup> 44.76	47.10	<sup>s</sup> 49.66	36.20	<sup>s</sup> 58.17	28.30	<sup>s</sup> 9.05	24.54
2	49.31	67.16	44.53	57.52	44.82	46.74	49.89	35.87	58.53	28.09	9.41	24.53
3	49.09	66.94	44.43	57.17	44.88	46.36	50.15	35.53	58.90	27.90	9.76	24.52
4	48.86	66.71	44.33	56.81	44.95	45.98	50.43	35.20	59.27	27.73	10.08	24.51
5	48.62	66.47	44.25	56.44	45.04	45.59	50.72	34.89	59.62	27.57	10.40	24.50
6	48.37	66.21	44.18	56.05	45.16	45.19	51.01	34.60	59.96	27.42	10.71	24.47
7	48.12	65.93	44.13	55.66	45.29	44.79	51.29	34.32	60.28	27.27	11.05	24.43
8	47.89	65.65	44.11	55.26	45.45	44.40	51.55	34.06	60.58	27.11	11.39	24.40
9	47.66	65.35	44.11	54.86	45.63	44.02	51.80	33.79	60.88	26.95	11.75	24.37
10	47.45	65.03	44.14	54.48	45.80	43.67	52.04	33.51	61.19	26.77	12.13	24.35
11	47.27	64.71	44.17	54.11	45.95	43.33	52.26	33.23	61.51	26.59	12.51	24.35
12	47.12	64.38	44.18	53.76	46.09	43.00	52.49	32.94	61.85	26.41	12.89	24.37
13	46.98	64.06	44.18	53.41	46.22	42.66	52.73	32.65	62.21	26.25	13.26	24.40
14	46.85	63.75	44.16	53.07	46.34	42.32	53.00	32.35	62.59	26.09	13.63	24.45
15	46.72	63.45	44.14	52.72	46.45	41.96	53.29	32.05	62.97	25.95	13.98	24.50
16	46.57	63.16	44.11	52.34	46.57	41.58	53.59	31.76	63.35	25.83	14.31	24.57
17	46.41	62.88	44.08	51.96	46.71	41.21	53.91	31.49	63.72	25.73	14.63	24.65
18	46.24	62.59	44.07	51.56	46.88	40.83	54.23	31.23	64.08	25.63	14.94	24.72
19	46.06	62.29	44.08	51.16	47.06	40.45	54.55	30.99	64.44	25.55	15.25	24.78
20	45.88	61.97	44.11	50.75	47.27	40.08	54.87	30.76	64.78	25.47	15.56	24.84
21	45.70	61.62	{ 44.17 }	{ 50.35 }	47.48	39.73	55.18	30.54	65.11	25.39	15.86	24.89
			{ 44.24 }	{ 49.97 }								
22	45.55	61.27	44.31	49.60	47.70	39.40	55.47	30.33	65.43	25.30	16.17	24.94
23	45.41	60.91	44.38	49.23	47.91	39.08	55.75	30.12	65.75	25.22	16.50	24.99
24	45.30	60.54	44.46	48.87	48.12	38.76	56.04	29.90	66.08	25.13	16.84	25.04
25	45.20	60.17	44.53	48.51	48.32	38.44	56.32	29.68	66.40	25.03	17.20	25.11
26	45.12	59.82	44.60	48.16	48.52	38.14	56.60	29.46	66.75	24.93	17.56	25.19
27	45.05	59.49	44.66	47.82	48.71	37.84	56.89	29.24	67.11	24.83	17.92	25.29
28	44.97	59.17	44.71	47.46	48.89	37.53	57.18	29.01	67.48	24.74	18.28	25.40
29	44.89	58.84	44.76	47.10	49.08	37.21	57.49	28.77	67.88	24.66	18.61	25.53
30	44.81	58.52			49.26	36.88	57.82	28.53	68.27	24.60	18.92	25.67
31	44.73	58.20			49.45	36.54	58.17	28.30	68.67	24.56	19.20	25.82
32	44.63	57.86			49.66	36.20			69.05	24.54		

Mean R.A. 22<sup>h</sup> 17<sup>m</sup> 9<sup>s</sup>.823 Mean Dec. — 86° 21' 56".56 Sec  $\delta$  15.776 Tan  $\delta$  — 15.744

T 2

## 276 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

v Octantis. Mag. 5.7

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.	R.A.	Dec. S.
	<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>		<sup>h</sup> <sup>m</sup>	
	22 17	86 21	22 17	86 21	22 17	86 21	22 17	86 21	22 17	86 21	22 16	86 21
	<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>		<sup>s</sup>	
1	19.20	25.82	26.84	31.71	29.71	40.57	26.87	49.45	18.90	55.69	68.97	56.50
2	19.47	25.95	27.01	31.93	29.73	40.88	26.69	49.73	18.57	55.83	68.61	56.42
3	19.73	26.07	27.19	32.16	29.75	41.20	26.49	50.02	18.23	55.95	68.26	56.33
4	20.00	26.18	27.39	32.40	29.75	41.52	26.27	50.31	17.87	56.05	67.93	56.23
5	20.28	26.29	27.58	32.65	29.73	41.86	26.05	50.58	17.52	56.15	67.61	56.11
6	20.57	26.41	27.77	32.92	29.69	42.20	25.81	50.84	17.18	56.22	67.31	55.99
7	20.88	26.54	27.95	33.20	29.63	42.53	25.57	51.10	16.86	56.28	67.03	55.88
8	21.20	26.68	28.10	33.49	29.56	42.86	25.32	51.34	16.55	56.33	66.76	55.77
9	21.52	26.82	28.24	33.80	29.48	43.19	25.07	51.56	16.24	56.38	66.49	55.66
10	21.83	26.99	28.37	34.11	29.38	43.50	24.83	51.77	15.95	56.45	66.20	55.56
11	22.13	27.18	28.48	34.41	29.29	43.79	24.59	51.97	15.66	56.51	65.90	55.45
12	22.41	27.37	28.57	34.71	29.20	44.08	24.37	52.17	15.36	56.59	65.58	55.34
13	22.68	27.57	28.65	35.00	29.11	44.37	24.16	52.37	15.05	56.67	65.24	55.22
14	22.94	27.78	28.73	35.29	29.04	44.65	23.95	52.58	14.72	56.74	64.90	55.07
15	23.18	27.98	28.80	35.58	28.97	44.93	23.74	52.81	14.37	56.80	64.57	54.90
16	23.41	28.19	28.88	35.85	28.92	45.21	23.52	53.03	14.00	56.84	64.25	54.71
17	23.62	28.39	28.97	36.11	28.87	45.50	23.27	53.26	13.63	56.85	63.95	54.52
18	23.84	28.58	29.08	36.38	28.80	45.81	22.99	53.48	13.26	56.84	63.67	54.32
19	24.06	28.76	29.19	36.65	28.70	46.13	22.69	53.68	12.91	56.82	63.42	54.12
20	24.29	28.95	29.31	36.93	28.58	46.45	22.38	53.87	12.57	56.78	63.18	53.93
21	24.53	29.13	29.42	37.24	28.43	46.76	22.08	54.04	12.26	56.75	62.93	53.75
22	24.79	29.31	29.51	37.56	28.27	47.06	21.77	54.19	11.96	56.73	62.68	53.57
23	25.06	29.51	29.58	37.88	28.09	47.35	21.48	54.33	11.67	56.71	62.42	53.39
24	25.32	29.73	29.63	38.21	27.92	47.62	21.20	54.47	11.36	56.70	62.15	53.21
25	25.58	29.97	29.65	38.54	27.75	47.87	20.94	54.60	11.05	56.69	61.88	53.03
26	25.81	30.22	29.65	38.85	27.59	48.12	20.68	54.75	10.73	56.69	61.60	52.83
27	26.02	30.47	29.64	39.15	27.44	48.37	20.41	54.90	10.40	56.68	61.31	52.63
28	26.21	30.74	29.64	39.44	27.31	48.62	20.13	55.07	10.05	56.65	61.02	52.42
29	26.38	31.00	29.64	39.71	27.18	48.89	19.85	55.23	9.70	56.62	60.74	52.19
30	26.53	31.25	29.65	39.99	27.03	49.17	19.55	55.39	9.34	56.57	60.48	51.95
31	26.68	31.49	29.68	40.27	26.87	49.45	19.23	55.55	8.97	56.50	60.23	51.69
32	26.84	31.71	29.71	40.57			18.90	55.69			59.98	51.41

Mean R.A. 22<sup>h</sup> 17<sup>m</sup> 9<sup>s</sup>.823 Mean Dec. — 86° 21' 56".56 Sec δ 15.776 Tan δ — 15.744

# APPARENT PLACES OF STARS, 1922. 277

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Andromedæ. Mag. 2.2		$\beta$ Cassiopeiæ. Mag. 2.4		$\gamma$ Pegasi. Mag. 2.9	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 0 <sup>m</sup> 4	<sup>°</sup> 28 <sup>'</sup> 39	<sup>h</sup> 0 <sup>m</sup> 4	<sup>°</sup> 58 <sup>'</sup> 43	<sup>h</sup> 0 <sup>m</sup> 9	<sup>°</sup> 14 <sup>'</sup> 44
Jan. 0.2	21.545 <sup>148</sup>	45.52 <sup>100</sup>	61.352 <sup>323</sup>	28.78 <sup>83</sup>	13.316 <sup>125</sup>	65.22 <sup>90</sup>
10.2	21.397 <sup>142</sup>	44.52 <sup>121</sup>	61.029 <sup>308</sup>	27.95 <sup>128</sup>	13.191 <sup>120</sup>	64.32 <sup>102</sup>
20.2	21.255 <sup>132</sup>	43.31 <sup>147</sup>	60.721 <sup>284</sup>	26.67 <sup>177</sup>	13.071 <sup>114</sup>	63.30 <sup>108</sup>
30.1	21.123 <sup>112</sup>	41.84 <sup>159</sup>	60.437 <sup>249</sup>	24.90 <sup>219</sup>	12.957 <sup>95</sup>	62.22 <sup>111</sup>
Feb. 9.1	21.011 <sup>87</sup>	40.25 <sup>169</sup>	60.188 <sup>199</sup>	22.71 <sup>248</sup>	12.862 <sup>74</sup>	61.11 <sup>108</sup>
19.1	20.924 <sup>54</sup>	38.56 <sup>169</sup>	59.989 <sup>142</sup>	20.23 <sup>267</sup>	12.788 <sup>48</sup>	60.03 <sup>101</sup>
Mar. 1.1	20.870 <sup>21</sup>	36.87 <sup>163</sup>	59.847 <sup>71</sup>	17.56 <sup>280</sup>	12.740 <sup>19</sup>	59.02 <sup>88</sup>
11.0	20.849 <sup>23</sup>	35.24 <sup>146</sup>	59.776 <sup>2</sup>	14.76 <sup>275</sup>	12.721 <sup>19</sup>	58.14 <sup>69</sup>
21.0	20.872 <sup>67</sup>	33.78 <sup>130</sup>	59.778 <sup>83</sup>	12.01 <sup>266</sup>	12.740 <sup>60</sup>	57.45 <sup>46</sup>
31.0	20.939 <sup>113</sup>	32.48 <sup>99</sup>	59.861 <sup>163</sup>	9.35 <sup>237</sup>	12.800 <sup>101</sup>	56.99 <sup>19</sup>
Apr. 10.0	21.052 <sup>158</sup>	31.49 <sup>67</sup>	60.024 <sup>238</sup>	6.98 <sup>207</sup>	12.901 <sup>141</sup>	56.80 <sup>10</sup>
19.9	21.210 <sup>206</sup>	30.82 <sup>28</sup>	60.262 <sup>311</sup>	4.91 <sup>165</sup>	13.042 <sup>186</sup>	56.90 <sup>43</sup>
29.9	21.416 <sup>243</sup>	30.54 <sup>9</sup>	60.573 <sup>371</sup>	3.26 <sup>122</sup>	13.228 <sup>221</sup>	57.33 <sup>73</sup>
May 9.9	21.659 <sup>277</sup>	30.63 <sup>51</sup>	60.944 <sup>423</sup>	2.04 <sup>69</sup>	13.449 <sup>253</sup>	58.06 <sup>104</sup>
19.8	21.936 <sup>304</sup>	31.14 <sup>86</sup>	61.367 <sup>464</sup>	1.35 <sup>15</sup>	13.702 <sup>278</sup>	59.10 <sup>133</sup>
29.8	22.240 <sup>323</sup>	32.00 <sup>124</sup>	61.831 <sup>489</sup>	1.20 <sup>36</sup>	13.980 <sup>299</sup>	60.43 <sup>156</sup>
June 8.8	22.563 <sup>337</sup>	33.24 <sup>154</sup>	62.320 <sup>501</sup>	1.56 <sup>87</sup>	14.279 <sup>310</sup>	61.99 <sup>178</sup>
18.8	22.900 <sup>334</sup>	34.78 <sup>185</sup>	62.821 <sup>500</sup>	2.43 <sup>138</sup>	14.589 <sup>313</sup>	63.77 <sup>196</sup>
28.7	23.234 <sup>327</sup>	36.63 <sup>205</sup>	63.321 <sup>487</sup>	3.81 <sup>183</sup>	14.902 <sup>309</sup>	65.73 <sup>205</sup>
July 8.7	23.561 <sup>310</sup>	38.68 <sup>227</sup>	63.808 <sup>459</sup>	5.64 <sup>221</sup>	15.211 <sup>293</sup>	67.78 <sup>210</sup>
18.7	23.871 <sup>287</sup>	40.95 <sup>238</sup>	64.267 <sup>422</sup>	7.85 <sup>259</sup>	15.504 <sup>272</sup>	69.88 <sup>209</sup>
28.7	24.158 <sup>257</sup>	43.33 <sup>244</sup>	64.689 <sup>375</sup>	10.44 <sup>287</sup>	15.776 <sup>247</sup>	71.97 <sup>204</sup>
Aug. 7.6	24.415 <sup>222</sup>	45.77 <sup>245</sup>	65.064 <sup>320</sup>	13.31 <sup>309</sup>	16.023 <sup>212</sup>	74.01 <sup>194</sup>
17.6	24.637 <sup>180</sup>	48.22 <sup>241</sup>	65.384 <sup>262</sup>	16.40 <sup>325</sup>	16.235 <sup>177</sup>	75.95 <sup>182</sup>
27.6	24.817 <sup>143</sup>	50.63 <sup>231</sup>	65.646 <sup>199</sup>	19.65 <sup>334</sup>	16.412 <sup>142</sup>	77.77 <sup>164</sup>
Sept. 6.5	24.960 <sup>102</sup>	52.94 <sup>219</sup>	65.845 <sup>137</sup>	22.99 <sup>335</sup>	16.554 <sup>102</sup>	79.41 <sup>145</sup>
16.5	25.062 <sup>59</sup>	55.13 <sup>202</sup>	65.982 <sup>71</sup>	26.34 <sup>330</sup>	16.656 <sup>63</sup>	80.86 <sup>125</sup>
26.5	25.121 <sup>24</sup>	57.15 <sup>180</sup>	66.053 <sup>11</sup>	29.64 <sup>317</sup>	16.719 <sup>30</sup>	82.11 <sup>101</sup>
Oct. 6.5	25.145 <sup>13</sup>	58.95 <sup>158</sup>	66.064 <sup>51</sup>	32.81 <sup>299</sup>	16.749 <sup>6</sup>	83.12 <sup>78</sup>
16.4	25.132 <sup>44</sup>	60.53 <sup>133</sup>	66.013 <sup>107</sup>	35.80 <sup>275</sup>	16.743 <sup>31</sup>	83.90 <sup>56</sup>
26.4	25.088 <sup>74</sup>	61.86 <sup>104</sup>	65.906 <sup>159</sup>	38.55 <sup>243</sup>	16.712 <sup>59</sup>	84.46 <sup>33</sup>
Nov. 5.4	25.014 <sup>96</sup>	62.90 <sup>75</sup>	65.747 <sup>203</sup>	40.98 <sup>206</sup>	16.653 <sup>79</sup>	84.79 <sup>11</sup>
15.4	24.918 <sup>116</sup>	63.65 <sup>43</sup>	65.544 <sup>244</sup>	43.04 <sup>161</sup>	16.574 <sup>98</sup>	84.90 <sup>8</sup>
25.3	24.802 <sup>132</sup>	64.08 <sup>14</sup>	65.300 <sup>278</sup>	44.65 <sup>114</sup>	16.476 <sup>111</sup>	84.82 <sup>30</sup>
Dec. 5.3	24.670 <sup>141</sup>	64.22 <sup>20</sup>	65.022 <sup>303</sup>	45.79 <sup>62</sup>	16.365 <sup>118</sup>	84.52 <sup>49</sup>
15.3	24.529 <sup>147</sup>	64.02 <sup>50</sup>	64.719 <sup>318</sup>	46.41 <sup>9</sup>	16.247 <sup>126</sup>	84.03 <sup>65</sup>
25.2	24.382 <sup>151</sup>	63.52 <sup>83</sup>	64.401 <sup>325</sup>	46.50 <sup>46</sup>	16.121 <sup>127</sup>	83.38 <sup>83</sup>
35.2	24.231	62.69	64.076	46.04	15.994	82.55
Mean Place	21.126	35.38	60.365	10.58	13.028	59.95
Sec $\delta$ , Tan $\delta$	1.140	+0.547	1.926	+1.646	1.034	+0.263
L $\alpha$ , L $\delta$	0.00	+0.4	0.00	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.04	0.0	-0.11	0.0	-0.02	0.0
AUTHORITY	A. E.		A. E.		A. E.	

## 278 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ι Ceti. Mag. 3·8		ζ Tucanæ. Mag. 4·3		δ Piscium. Mag. 5·6	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 0 15	<sup>°</sup> 15'	<sup>h</sup> <sup>m</sup> 0 15	65 19	<sup>h</sup> <sup>m</sup> 0 16	<sup>°</sup> 7 45
Jan.	0·2 27·298 <sup>122</sup>	25·77 61	59·81 <sup>41</sup>	76·04 <sup>75</sup>	35·245 <sup>120</sup>	28·43 82
	10·2 27·176 <sup>116</sup>	26·38 47	59·40 <sup>39</sup>	75·29 <sup>128</sup>	35·125 <sup>117</sup>	27·61 85
	20·2 27·060 <sup>107</sup>	26·85 30	59·01 <sup>34</sup>	74·01 <sup>182</sup>	35·008 <sup>109</sup>	26·76 86
	30·2 26·953 <sup>93</sup>	27·15 12	58·67 <sup>30</sup>	72·19 <sup>226</sup>	34·899 <sup>95</sup>	25·90 82
Feb.	9·1 26·860 <sup>72</sup>	27·27 8	58·37 <sup>24</sup>	69·93 <sup>269</sup>	34·804 <sup>77</sup>	25·08 75
	19·1 26·788 <sup>50</sup>	27·19 31	58·13 <sup>17</sup>	67·24 <sup>302</sup>	34·727 <sup>52</sup>	24·33 64
Mar.	1·1 26·738 <sup>19</sup>	26·88 52	57·96 <sup>11</sup>	64·22 <sup>328</sup>	34·675 <sup>22</sup>	23·69 47
	11·0 26·719 <sup>12</sup>	26·36 75	57·85 <sup>3</sup>	60·94 <sup>349</sup>	34·653 <sup>11</sup>	23·22 28
	21·0 26·731 <sup>52</sup>	25·61 101	57·82 <sup>5</sup>	57·45 <sup>359</sup>	34·664 <sup>51</sup>	22·94 4
	31·0 26·783 <sup>90</sup>	24·60 124	57·87 <sup>14</sup>	53·86 <sup>363</sup>	34·715 <sup>91</sup>	22·90 21
Apr.	10·0 26·873 <sup>131</sup>	23·36 145	58·01 <sup>21</sup>	50·23 <sup>359</sup>	34·806 <sup>132</sup>	23·11 49
	19·9 27·004 <sup>169</sup>	21·91 164	58·22 <sup>30</sup>	46·64 <sup>345</sup>	34·938 <sup>173</sup>	23·60 78
	29·9 27·173 <sup>208</sup>	20·27 183	58·52 <sup>37</sup>	43·19 <sup>328</sup>	35·111 <sup>210</sup>	24·38 105
May	9·9 27·381 <sup>241</sup>	18·44 196	58·89 <sup>43</sup>	39·91 <sup>300</sup>	35·321 <sup>243</sup>	25·43 130
	19·9 27·622 <sup>264</sup>	16·48 205	59·32 <sup>50</sup>	36·91 <sup>268</sup>	35·564 <sup>272</sup>	26·73 153
	29·8 27·886 <sup>290</sup>	14·43 208	59·82 <sup>55</sup>	34·23 <sup>227</sup>	35·836 <sup>290</sup>	28·26 173
June	8·8 28·176 <sup>301</sup>	12·35 204	60·37 <sup>57</sup>	31·96 <sup>183</sup>	36·126 <sup>304</sup>	29·99 187
	18·8 28·477 <sup>307</sup>	10·31 198	60·94 <sup>60</sup>	30·13 <sup>133</sup>	36·430 <sup>308</sup>	31·86 196
	28·7 28·784 <sup>306</sup>	8·33 185	61·54 <sup>60</sup>	28·80 <sup>78</sup>	36·738 <sup>304</sup>	33·82 200
July	8·7 29·090 <sup>292</sup>	6·48 169	62·14 <sup>59</sup>	28·02 <sup>25</sup>	37·042 <sup>292</sup>	35·82 199
	18·7 29·382 <sup>274</sup>	4·79 145	62·73 <sup>55</sup>	27·77 <sup>32</sup>	37·334 <sup>272</sup>	37·81 193
	28·7 29·656 <sup>253</sup>	3·34 122	63·28 <sup>51</sup>	28·09 <sup>85</sup>	37·606 <sup>248</sup>	39·74 182
Aug.	7·6 29·909 <sup>220</sup>	2·12 94	63·79 <sup>45</sup>	28·94 <sup>137</sup>	37·854 <sup>217</sup>	41·56 166
	17·6 30·129 <sup>182</sup>	1·18 62	64·24 <sup>38</sup>	30·31 <sup>183</sup>	38·071 <sup>181</sup>	43·22 148
	27·6 30·311 <sup>149</sup>	0·56 37	64·62 <sup>29</sup>	32·14 <sup>224</sup>	38·252 <sup>146</sup>	44·70 128
Sept.	6·6 30·460 <sup>107</sup>	0·19 5	64·91 <sup>21</sup>	34·38 <sup>256</sup>	38·398 <sup>108</sup>	45·98 105
	16·5 30·567 <sup>71</sup>	0·14 18	65·12 <sup>11</sup>	36·94 <sup>279</sup>	38·506 <sup>71</sup>	47·03 82
	26·5 30·638 <sup>34</sup>	0·32 46	65·23 <sup>1</sup>	39·73 <sup>291</sup>	38·577 <sup>36</sup>	47·85 59
Oct.	6·5 30·672 <sup>1</sup>	0·78 63	65·24 <sup>8</sup>	42·64 <sup>292</sup>	38·613 <sup>3</sup>	48·44 36
	16·4 30·671 <sup>28</sup>	1·41 80	65·16 <sup>17</sup>	45·56 <sup>280</sup>	38·616 <sup>26</sup>	48·80 16
	26·4 30·643 <sup>58</sup>	2·21 89	64·99 <sup>24</sup>	48·36 <sup>258</sup>	38·590 <sup>50</sup>	48·96 2
Nov.	5·4 30·585 <sup>79</sup>	3·10 95	64·75 <sup>31</sup>	50·94 <sup>226</sup>	38·540 <sup>72</sup>	48·94 21
	15·4 30·506 <sup>93</sup>	4·05 97	64·44 <sup>36</sup>	53·20 <sup>183</sup>	38·468 <sup>89</sup>	48·73 36
	25·3 30·413 <sup>108</sup>	5·02 97	64·08 <sup>39</sup>	55·03 <sup>135</sup>	38·379 <sup>102</sup>	48·37 50
Dec.	5·3 30·305 <sup>117</sup>	5·99 89	63·69 <sup>42</sup>	56·38 <sup>79</sup>	38·277 <sup>113</sup>	47·87 60
	15·3 30·188 <sup>121</sup>	6·88 80	63·27 <sup>43</sup>	57·17 <sup>22</sup>	38·164 <sup>118</sup>	47·27 71
	25·3 30·067 <sup>123</sup>	7·68 72	62·84 <sup>41</sup>	57·39 <sup>38</sup>	38·046 <sup>122</sup>	46·56 79
	35·2 29·944	8·40	62·43	57·01	37·924	45·77
Mean Place	27·243	22·32	61·21	58·10	34·991	25·91
Sec δ, Tan δ	1·013	—0·163	2·396	—2·177	1·009	+0·136
L α, L δ	0·00	+0·4	0·00	+0·4	0·00	+0·4
ω α, ω δ	+0·01	+0·1	+0·15	+0·1	—0·01	+0·1
AUTHORITY	A. E.		A. E.			

APPARENT PLACES OF STARS, 1922. 279

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	44 Piscium. Mag. 6.0		$\beta$ Hydri. Mag. 2.9		$\alpha$ Phoenicis. Mag. 2.4	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 0 21	<sup>°</sup> <sup>'</sup> 1 30	<sup>h</sup> <sup>m</sup> 0 21	<sup>°</sup> <sup>'</sup> 77 41	<sup>h</sup> <sup>m</sup> 0 22	<sup>°</sup> <sup>'</sup> 42 43
Jan.	0.2 24.421 <sup>119</sup>	27.96 <sup>76</sup>	37.53 <sup>90</sup>	56.02 <sup>95</sup>	25.552 <sup>197</sup>	60.45 <sup>3</sup>
	10.2 24.302 <sup>116</sup>	27.20 <sup>72</sup>	36.63 <sup>85</sup>	55.07 <sup>154</sup>	25.355 <sup>188</sup>	60.42 <sup>48</sup>
	20.2 24.186 <sup>110</sup>	26.48 <sup>66</sup>	35.78 <sup>77</sup>	53.53 <sup>209</sup>	25.167 <sup>171</sup>	59.94 <sup>91</sup>
	30.2 24.076 <sup>95</sup>	25.82 <sup>57</sup>	35.01 <sup>67</sup>	51.44 <sup>255</sup>	24.996 <sup>151</sup>	59.03 <sup>131</sup>
Feb.	9.1 23.981 <sup>79</sup>	25.25 <sup>44</sup>	34.34 <sup>56</sup>	48.89 <sup>298</sup>	24.845 <sup>123</sup>	57.72 <sup>170</sup>
	19.1 23.902 <sup>55</sup>	24.81 <sup>30</sup>	33.78 <sup>42</sup>	45.91 <sup>330</sup>	24.722 <sup>88</sup>	56.02 <sup>205</sup>
Mar.	1.1 23.847 <sup>25</sup>	24.51 <sup>11</sup>	33.36 <sup>27</sup>	42.61 <sup>355</sup>	24.634 <sup>53</sup>	53.97 <sup>233</sup>
	11.0 23.822 <sup>7</sup>	24.40 <sup>10</sup>	33.09 <sup>13</sup>	39.06 <sup>372</sup>	24.581 <sup>8</sup>	51.64 <sup>257</sup>
	21.0 23.829 <sup>45</sup>	24.50 <sup>33</sup>	32.96 <sup>3</sup>	35.34 <sup>378</sup>	24.573 <sup>38</sup>	49.07 <sup>277</sup>
	31.0 23.874 <sup>85</sup>	24.83 <sup>59</sup>	32.99 <sup>19</sup>	31.56 <sup>378</sup>	24.611 <sup>88</sup>	46.30 <sup>292</sup>
Apr.	10.0 23.959 <sup>125</sup>	25.42 <sup>85</sup>	33.18 <sup>34</sup>	27.78 <sup>369</sup>	24.699 <sup>137</sup>	43.38 <sup>299</sup>
	19.9 24.084 <sup>166</sup>	26.27 <sup>109</sup>	33.52 <sup>49</sup>	24.09 <sup>352</sup>	24.836 <sup>189</sup>	40.39 <sup>302</sup>
	29.9 24.250 <sup>204</sup>	27.36 <sup>134</sup>	34.01 <sup>63</sup>	20.57 <sup>326</sup>	25.025 <sup>234</sup>	37.37 <sup>296</sup>
May	9.9 24.454 <sup>237</sup>	28.70 <sup>155</sup>	34.64 <sup>76</sup>	17.31 <sup>295</sup>	25.259 <sup>279</sup>	34.41 <sup>283</sup>
	19.9 24.691 <sup>265</sup>	30.25 <sup>172</sup>	35.40 <sup>87</sup>	14.36 <sup>259</sup>	25.538 <sup>315</sup>	31.58 <sup>268</sup>
	29.8 24.956 <sup>287</sup>	31.97 <sup>186</sup>	36.27 <sup>96</sup>	11.77 <sup>213</sup>	25.853 <sup>345</sup>	28.90 <sup>240</sup>
June	8.8 25.243 <sup>300</sup>	33.83 <sup>195</sup>	37.23 <sup>103</sup>	9.64 <sup>166</sup>	26.198 <sup>366</sup>	26.50 <sup>212</sup>
	18.8 25.543 <sup>305</sup>	35.78 <sup>199</sup>	38.26 <sup>107</sup>	7.98 <sup>108</sup>	26.564 <sup>377</sup>	24.38 <sup>175</sup>
	28.7 25.848 <sup>302</sup>	37.77 <sup>196</sup>	39.33 <sup>109</sup>	6.90 <sup>54</sup>	26.941 <sup>379</sup>	22.63 <sup>134</sup>
July	8.7 26.150 <sup>293</sup>	39.73 <sup>189</sup>	40.42 <sup>107</sup>	6.36 <sup>2</sup>	27.320 <sup>368</sup>	21.29 <sup>89</sup>
	18.7 26.443 <sup>274</sup>	41.62 <sup>177</sup>	41.49 <sup>102</sup>	6.38 <sup>61</sup>	27.688 <sup>349</sup>	20.40 <sup>42</sup>
	28.7 26.717 <sup>250</sup>	43.39 <sup>161</sup>	42.51 <sup>94</sup>	6.99 <sup>115</sup>	28.037 <sup>321</sup>	19.98 <sup>5</sup>
Aug.	7.6 26.967 <sup>219</sup>	45.00 <sup>141</sup>	43.45 <sup>84</sup>	8.14 <sup>167</sup>	28.358 <sup>285</sup>	20.03 <sup>52</sup>
	17.6 27.186 <sup>186</sup>	46.41 <sup>118</sup>	44.29 <sup>71</sup>	9.81 <sup>217</sup>	28.643 <sup>240</sup>	20.55 <sup>98</sup>
	27.6 27.372 <sup>150</sup>	47.59 <sup>94</sup>	45.00 <sup>55</sup>	11.98 <sup>253</sup>	28.883 <sup>192</sup>	21.53 <sup>138</sup>
Sept.	6.6 27.522 <sup>112</sup>	48.53 <sup>69</sup>	45.55 <sup>38</sup>	14.51 <sup>284</sup>	29.075 <sup>140</sup>	22.91 <sup>171</sup>
	16.5 27.634 <sup>75</sup>	49.22 <sup>44</sup>	45.93 <sup>19</sup>	17.35 <sup>306</sup>	29.215 <sup>86</sup>	24.62 <sup>201</sup>
	26.5 27.709 <sup>41</sup>	49.66 <sup>20</sup>	46.12 <sup>1</sup>	20.41 <sup>313</sup>	29.301 <sup>33</sup>	26.63 <sup>223</sup>
Oct.	6.5 27.750 <sup>7</sup>	49.86 <sup>1</sup>	46.13 <sup>18</sup>	23.54 <sup>311</sup>	29.334 <sup>14</sup>	28.86 <sup>233</sup>
	16.4 27.757 <sup>22</sup>	49.85 <sup>20</sup>	45.95 <sup>36</sup>	26.65 <sup>293</sup>	29.320 <sup>62</sup>	31.19 <sup>234</sup>
	26.4 27.735 <sup>47</sup>	49.65 <sup>36</sup>	45.59 <sup>51</sup>	29.58 <sup>270</sup>	29.258 <sup>101</sup>	33.53 <sup>225</sup>
Nov.	5.4 27.688 <sup>68</sup>	49.29 <sup>50</sup>	45.08 <sup>67</sup>	32.28 <sup>230</sup>	29.157 <sup>135</sup>	35.78 <sup>209</sup>
	15.4 27.620 <sup>86</sup>	48.79 <sup>61</sup>	44.41 <sup>77</sup>	34.58 <sup>181</sup>	29.022 <sup>160</sup>	37.87 <sup>182</sup>
	25.3 27.534 <sup>99</sup>	48.18 <sup>68</sup>	43.64 <sup>86</sup>	36.39 <sup>130</sup>	28.862 <sup>181</sup>	39.69 <sup>153</sup>
Dec.	5.3 27.435 <sup>111</sup>	47.50 <sup>73</sup>	42.78 <sup>91</sup>	37.69 <sup>66</sup>	28.681 <sup>194</sup>	41.22 <sup>113</sup>
	15.3 27.324 <sup>116</sup>	46.77 <sup>76</sup>	41.87 <sup>93</sup>	38.35 <sup>7</sup>	28.487 <sup>199</sup>	42.35 <sup>68</sup>
	25.3 27.208 <sup>120</sup>	46.01 <sup>77</sup>	40.94 <sup>91</sup>	38.42 <sup>60</sup>	28.288 <sup>200</sup>	43.03 <sup>27</sup>
	35.2 27.088	45.24	40.03	37.82	28.088	43.30
Mean Place	24.208	27.87	40.59	36.72	25.974	46.47
Sec $\delta$ , Tan $\delta$	1.000	+0.027	4.696	-4.584	1.361	-0.924
L $\alpha$ , L $\delta$	0.00	+0.4	-0.01	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+0.1	+0.31	+0.1	+0.06	+0.1
AUTHORITY			A. E.		A. E.	

280 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	12 Ceti. Mag. 6.0		ε Andromedæ. Mag. 4.5		δ Andromedæ. Mag. 3.5	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 0 26	<sup>°</sup> <sup>'</sup> 4 22	<sup>h</sup> <sup>m</sup> 0 34	<sup>°</sup> <sup>'</sup> 28 53	<sup>h</sup> <sup>m</sup> 0 35	<sup>°</sup> <sup>'</sup> 30 25
Jan. 0.2	3.681 <sup>s</sup> <sub>121</sub>	79.26 <sub>71</sub>	26.392 <sup>s</sup> <sub>152</sub>	27.36 <sub>78</sub>	9.823 <sup>s</sup> <sub>156</sub>	72.65 <sub>78</sub>
10.2	3.560 <sub>118</sub>	79.97 <sub>60</sub>	26.240 <sub>153</sub>	26.58 <sub>103</sub>	9.667 <sub>157</sub>	71.87 <sub>101</sub>
20.2	3.442 <sub>111</sub>	80.57 <sub>48</sub>	26.087 <sub>146</sub>	25.55 <sub>126</sub>	9.510 <sub>149</sub>	70.86 <sub>128</sub>
30.2	3.331 <sub>100</sub>	81.05 <sub>31</sub>	25.941 <sub>134</sub>	24.29 <sub>143</sub>	9.361 <sub>138</sub>	69.58 <sub>146</sub>
Feb. 9.1	3.231 <sub>79</sub>	81.36 <sub>17</sub>	25.807 <sub>115</sub>	22.86 <sub>155</sub>	9.223 <sub>118</sub>	68.12 <sub>159</sub>
19.1	3.152 <sub>58</sub>	81.53 <sub>3</sub>	25.692 <sub>87</sub>	21.31 <sub>159</sub>	9.105 <sub>88</sub>	66.53 <sub>165</sub>
Mar. 1.1	3.094 <sub>31</sub>	81.50 <sub>23</sub>	25.605 <sub>52</sub>	19.72 <sub>157</sub>	9.017 <sub>53</sub>	64.88 <sub>164</sub>
11.1	3.063 <sub>2</sub>	81.27 <sub>48</sub>	25.553 <sub>13</sub>	18.15 <sub>146</sub>	8.964 <sub>14</sub>	63.24 <sub>154</sub>
21.0	3.065 <sub>42</sub>	80.79 <sub>68</sub>	25.540 <sub>32</sub>	16.69 <sub>130</sub>	8.950 <sub>33</sub>	61.70 <sub>137</sub>
31.0	3.107 <sub>78</sub>	80.11 <sub>96</sub>	25.572 <sub>80</sub>	15.39 <sub>106</sub>	8.983 <sub>81</sub>	60.33 <sub>115</sub>
Apr. 10.0	3.185 <sub>121</sub>	79.15 <sub>117</sub>	25.652 <sub>128</sub>	14.33 <sub>76</sub>	9.064 <sub>129</sub>	59.18 <sub>84</sub>
19.9	3.306 <sub>159</sub>	77.98 <sub>142</sub>	25.780 <sub>175</sub>	13.57 <sub>44</sub>	9.193 <sub>178</sub>	58.34 <sub>51</sub>
29.9	3.465 <sub>199</sub>	76.56 <sub>158</sub>	25.955 <sub>219</sub>	13.13 <sub>7</sub>	9.371 <sub>222</sub>	57.83 <sub>15</sub>
May 9.9	3.664 <sub>234</sub>	74.98 <sub>179</sub>	26.174 <sub>258</sub>	13.06 <sub>30</sub>	9.593 <sub>260</sub>	57.68 <sub>22</sub>
19.9	3.898 <sub>262</sub>	73.19 <sub>190</sub>	26.432 <sub>291</sub>	13.36 <sub>67</sub>	9.853 <sub>293</sub>	57.90 <sub>62</sub>
29.8	4.160 <sub>281</sub>	71.29 <sub>199</sub>	26.723 <sub>314</sub>	14.03 <sub>102</sub>	10.146 <sub>319</sub>	58.52 <sub>98</sub>
June 8.8	4.441 <sub>299</sub>	69.30 <sub>202</sub>	27.037 <sub>330</sub>	15.05 <sub>135</sub>	10.465 <sub>335</sub>	59.50 <sub>130</sub>
18.8	4.740 <sub>305</sub>	67.28 <sub>200</sub>	27.367 <sub>337</sub>	16.40 <sub>164</sub>	10.800 <sub>342</sub>	60.80 <sub>161</sub>
28.8	5.045 <sub>304</sub>	65.28 <sub>192</sub>	27.704 <sub>334</sub>	18.04 <sub>188</sub>	11.142 <sub>339</sub>	62.41 <sub>186</sub>
July 8.7	5.349 <sub>293</sub>	63.36 <sub>179</sub>	28.038 <sub>322</sub>	19.92 <sub>208</sub>	11.481 <sub>326</sub>	64.27 <sub>208</sub>
18.7	5.642 <sub>276</sub>	61.57 <sub>163</sub>	28.360 <sub>304</sub>	22.00 <sub>221</sub>	11.807 <sub>309</sub>	66.35 <sub>224</sub>
28.7	5.918 <sub>256</sub>	59.94 <sub>140</sub>	28.664 <sub>278</sub>	24.21 <sub>230</sub>	12.116 <sub>282</sub>	68.59 <sub>232</sub>
Aug. 7.6	6.174 <sub>225</sub>	58.54 <sub>118</sub>	28.942 <sub>247</sub>	26.51 <sub>233</sub>	12.398 <sub>251</sub>	70.91 <sub>238</sub>
17.6	6.399 <sub>188</sub>	57.36 <sub>89</sub>	29.189 <sub>212</sub>	28.84 <sub>232</sub>	12.649 <sub>215</sub>	73.29 <sub>236</sub>
27.6	6.587 <sub>156</sub>	56.47 <sub>62</sub>	29.401 <sub>173</sub>	31.16 <sub>224</sub>	12.864 <sub>177</sub>	75.65 <sub>232</sub>
Sept. 6.6	6.743 <sub>117</sub>	55.85 <sub>36</sub>	29.574 <sub>134</sub>	33.40 <sub>214</sub>	13.041 <sub>137</sub>	77.97 <sub>221</sub>
16.5	6.860 <sub>81</sub>	55.49 <sub>8</sub>	29.708 <sub>95</sub>	35.54 <sub>199</sub>	13.178 <sub>98</sub>	80.18 <sub>207</sub>
26.5	6.941 <sub>44</sub>	55.41 <sub>15</sub>	29.803 <sub>57</sub>	37.53 <sub>181</sub>	13.276 <sub>61</sub>	82.25 <sub>191</sub>
Oct. 6.5	6.985 <sub>12</sub>	55.56 <sub>36</sub>	29.860 <sub>21</sub>	39.34 <sub>161</sub>	13.337 <sub>22</sub>	84.16 <sub>171</sub>
16.5	6.997 <sub>16</sub>	55.92 <sub>54</sub>	29.881 <sub>12</sub>	40.95 <sub>138</sub>	13.359 <sub>10</sub>	85.87 <sub>147</sub>
26.4	6.981 <sub>46</sub>	56.46 <sub>66</sub>	29.869 <sub>41</sub>	42.33 <sub>114</sub>	13.349 <sub>42</sub>	87.34 <sub>124</sub>
Nov. 5.4	6.935 <sub>67</sub>	57.12 <sub>80</sub>	29.828 <sub>69</sub>	43.47 <sub>86</sub>	13.307 <sub>70</sub>	88.58 <sub>94</sub>
15.4	6.868 <sub>84</sub>	57.92 <sub>83</sub>	29.759 <sub>92</sub>	44.33 <sub>59</sub>	13.237 <sub>93</sub>	89.52 <sub>66</sub>
25.3	6.784 <sub>101</sub>	58.75 <sub>86</sub>	29.667 <sub>112</sub>	44.92 <sub>29</sub>	13.144 <sub>114</sub>	90.18 <sub>36</sub>
Dec. 5.3	6.683 <sub>109</sub>	59.61 <sub>84</sub>	29.555 <sub>129</sub>	45.21 <sub>0</sub>	13.030 <sub>131</sub>	90.54 <sub>4</sub>
15.3	6.574 <sub>117</sub>	60.45 <sub>81</sub>	29.426 <sub>142</sub>	45.21 <sub>31</sub>	12.899 <sub>145</sub>	90.58 <sub>25</sub>
25.3	6.457 <sub>121</sub>	61.26 <sub>74</sub>	29.284 <sub>151</sub>	44.90 <sub>60</sub>	12.754 <sub>154</sub>	90.33 <sub>58</sub>
35.2	6.336	62.00	29.133	44.30	12.600	89.75
Mean Place	3.507	77.07	25.761	18.32	9.164	63.14
Sec δ, Tan δ	1.003	-0.077	1.142	+0.552	1.160	+0.588
L α, L δ	0.00	+0.4	0.00	+0.4	0.00	+0.4
ω α, ω δ	+0.01	+0.1	-0.04	+0.1	-0.04	+0.2
AUTHORITY	A. E.		A. N.		A. E.	

# APPARENT PLACES OF STARS, 1922. 281

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Cassiopeiae. Mag. 2.2-2.8		$\beta$ Ceti. Mag. 2.2		$\delta$ Piscium. Mag. 4.6	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 0 36	<sup>m</sup> 56 6	<sup>h</sup> 0 39	<sup>m</sup> 18 24	<sup>h</sup> 0 44	<sup>m</sup> 7 9
Jan. 0.2	5.472 <sup>295</sup>	51.74 <sup>46</sup>	40.595 <sup>135</sup>	59.52 <sup>55</sup>	38.423 <sup>124</sup>	39.97 <sup>76</sup>
10.2	5.177 <sup>295</sup>	51.28 <sup>95</sup>	40.460 <sup>133</sup>	60.07 <sup>33</sup>	38.299 <sup>124</sup>	39.21 <sup>79</sup>
20.2	4.882 <sup>283</sup>	50.33 <sup>145</sup>	40.327 <sup>126</sup>	60.40 <sup>3</sup>	38.175 <sup>122</sup>	38.42 <sup>78</sup>
30.2	4.599 <sup>259</sup>	48.88 <sup>183</sup>	40.201 <sup>115</sup>	60.43 <sup>20</sup>	38.053 <sup>112</sup>	37.64 <sup>75</sup>
Feb. 9.1	4.340 <sup>221</sup>	47.05 <sup>220</sup>	40.086 <sup>99</sup>	60.23 <sup>52</sup>	37.941 <sup>98</sup>	36.89 <sup>67</sup>
19.1	4.119 <sup>171</sup>	44.85 <sup>243</sup>	39.987 <sup>74</sup>	59.71 <sup>77</sup>	37.843 <sup>76</sup>	36.22 <sup>57</sup>
Mar. 1.1	3.948 <sup>115</sup>	42.42 <sup>256</sup>	39.913 <sup>48</sup>	58.94 <sup>101</sup>	37.767 <sup>49</sup>	35.65 <sup>42</sup>
11.1	3.833 <sup>46</sup>	39.86 <sup>261</sup>	39.865 <sup>13</sup>	57.93 <sup>129</sup>	37.718 <sup>16</sup>	35.23 <sup>23</sup>
21.0	3.787 <sup>26</sup>	37.25 <sup>256</sup>	39.852 <sup>22</sup>	56.64 <sup>152</sup>	37.702 <sup>22</sup>	35.00 <sup>2</sup>
31.0	3.813 <sup>99</sup>	34.69 <sup>236</sup>	39.874 <sup>66</sup>	55.12 <sup>176</sup>	37.724 <sup>63</sup>	34.98 <sup>22</sup>
Apr. 10.0	3.912 <sup>176</sup>	32.33 <sup>210</sup>	39.940 <sup>106</sup>	53.36 <sup>195</sup>	37.787 <sup>105</sup>	35.20 <sup>49</sup>
19.9	4.088 <sup>248</sup>	30.23 <sup>176</sup>	40.046 <sup>149</sup>	51.41 <sup>212</sup>	37.892 <sup>148</sup>	35.69 <sup>75</sup>
29.9	4.336 <sup>313</sup>	28.47 <sup>137</sup>	40.195 <sup>190</sup>	49.29 <sup>220</sup>	38.040 <sup>188</sup>	36.44 <sup>102</sup>
May 9.9	4.649 <sup>369</sup>	27.10 <sup>86</sup>	40.385 <sup>227</sup>	47.09 <sup>231</sup>	38.228 <sup>224</sup>	37.46 <sup>126</sup>
19.9	5.018 <sup>413</sup>	26.24 <sup>42</sup>	40.612 <sup>256</sup>	44.78 <sup>231</sup>	38.452 <sup>256</sup>	38.72 <sup>149</sup>
29.8	5.431 <sup>448</sup>	25.82 <sup>10</sup>	40.868 <sup>285</sup>	42.47 <sup>228</sup>	38.708 <sup>280</sup>	40.21 <sup>167</sup>
June 8.8	5.879 <sup>469</sup>	25.92 <sup>59</sup>	41.153 <sup>301</sup>	40.19 <sup>219</sup>	38.988 <sup>297</sup>	41.88 <sup>181</sup>
18.8	6.348 <sup>479</sup>	26.51 <sup>107</sup>	41.454 <sup>314</sup>	38.00 <sup>207</sup>	39.285 <sup>306</sup>	43.69 <sup>191</sup>
28.8	6.827 <sup>472</sup>	27.58 <sup>153</sup>	41.768 <sup>314</sup>	35.93 <sup>183</sup>	39.591 <sup>306</sup>	45.60 <sup>195</sup>
July 8.7	7.299 <sup>455</sup>	29.11 <sup>192</sup>	42.082 <sup>308</sup>	34.10 <sup>158</sup>	39.897 <sup>299</sup>	47.55 <sup>193</sup>
18.7	7.754 <sup>429</sup>	31.03 <sup>228</sup>	42.390 <sup>293</sup>	32.52 <sup>128</sup>	40.196 <sup>285</sup>	49.48 <sup>188</sup>
28.7	8.183 <sup>392</sup>	33.31 <sup>259</sup>	42.683 <sup>273</sup>	31.24 <sup>97</sup>	40.481 <sup>262</sup>	51.36 <sup>176</sup>
Aug. 7.6	8.575 <sup>347</sup>	35.90 <sup>283</sup>	42.956 <sup>242</sup>	30.27 <sup>60</sup>	40.743 <sup>236</sup>	53.12 <sup>162</sup>
17.6	8.922 <sup>299</sup>	38.73 <sup>301</sup>	43.198 <sup>209</sup>	29.67 <sup>27</sup>	40.979 <sup>205</sup>	54.74 <sup>144</sup>
27.6	9.221 <sup>242</sup>	41.74 <sup>314</sup>	43.407 <sup>178</sup>	29.40 <sup>10</sup>	41.184 <sup>171</sup>	56.18 <sup>122</sup>
Sept. 6.6	9.463 <sup>188</sup>	44.88 <sup>319</sup>	43.585 <sup>135</sup>	29.50 <sup>43</sup>	41.355 <sup>135</sup>	57.40 <sup>100</sup>
16.5	9.651 <sup>129</sup>	48.07 <sup>317</sup>	43.720 <sup>96</sup>	29.93 <sup>72</sup>	41.490 <sup>99</sup>	58.40 <sup>77</sup>
26.5	9.780 <sup>70</sup>	51.24 <sup>310</sup>	43.816 <sup>56</sup>	30.65 <sup>99</sup>	41.589 <sup>64</sup>	59.17 <sup>54</sup>
Oct. 6.5	9.850 <sup>13</sup>	54.34 <sup>295</sup>	43.872 <sup>23</sup>	31.64 <sup>119</sup>	41.653 <sup>33</sup>	59.71 <sup>32</sup>
16.5	9.863 <sup>40</sup>	57.29 <sup>278</sup>	43.895 <sup>13</sup>	32.83 <sup>130</sup>	41.686 <sup>2</sup>	60.03 <sup>11</sup>
26.4	9.823 <sup>89</sup>	60.07 <sup>249</sup>	43.882 <sup>42</sup>	34.13 <sup>141</sup>	41.688 <sup>25</sup>	60.14 <sup>7</sup>
Nov. 5.4	9.734 <sup>139</sup>	62.56 <sup>216</sup>	43.840 <sup>66</sup>	35.54 <sup>142</sup>	41.663 <sup>49</sup>	60.07 <sup>23</sup>
15.4	9.595 <sup>182</sup>	64.72 <sup>178</sup>	43.774 <sup>89</sup>	36.96 <sup>137</sup>	41.614 <sup>70</sup>	59.84 <sup>38</sup>
25.3	9.413 <sup>220</sup>	66.50 <sup>138</sup>	43.685 <sup>107</sup>	38.33 <sup>125</sup>	41.544 <sup>86</sup>	59.46 <sup>50</sup>
Dec. 5.3	9.193 <sup>249</sup>	67.88 <sup>89</sup>	43.578 <sup>119</sup>	39.58 <sup>114</sup>	41.458 <sup>102</sup>	58.96 <sup>59</sup>
15.3	8.944 <sup>277</sup>	68.77 <sup>38</sup>	43.459 <sup>125</sup>	40.72 <sup>93</sup>	41.356 <sup>113</sup>	58.37 <sup>68</sup>
25.3	8.667 <sup>291</sup>	69.15 <sup>13</sup>	43.334 <sup>134</sup>	41.65 <sup>68</sup>	41.243 <sup>121</sup>	57.69 <sup>73</sup>
35.2	8.376	69.02	43.200	42.33	41.122	56.96
Mean Place	4.220	35.24	40.505	51.91	38.006	38.85
Sec $\delta$ , Tan $\delta$	1.793	+1.489	1.054	-0.333	1.008	+0.126
L $\alpha$ , L $\delta$	+0.01	+0.4	0.00	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.10	+0.2	+0.02	+0.2	-0.01	+0.2
AUTHORITY	A. E.		A. E.		A. N.	

282 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	20 Ceti. Mag. 4.9		γ Cassiopeiæ. Mag. 2.3		μ Andromedæ. Mag. 3.9	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 0 49	<sup>°</sup> <sup>'</sup> 1 33	<sup>h</sup> <sup>m</sup> 0 51	<sup>°</sup> <sup>'</sup> 60 17	<sup>h</sup> <sup>m</sup> 0 52	<sup>°</sup> <sup>'</sup> 38 4
Jan. 0.2	1.539 <sup>123</sup>	64.71 <sup>74</sup>	60.85 <sup>34</sup>	57.52 <sup>20</sup>	25.991 <sup>181</sup>	46.66 <sup>53</sup>
10.2	1.416 <sup>124</sup>	65.45 <sup>65</sup>	60.51 <sup>35</sup>	57.32 <sup>71</sup>	25.810 <sup>184</sup>	46.13 <sup>92</sup>
20.2	1.292 <sup>122</sup>	66.10 <sup>57</sup>	60.16 <sup>34</sup>	56.61 <sup>125</sup>	25.626 <sup>180</sup>	45.21 <sup>119</sup>
30.2	1.170 <sup>113</sup>	66.67 <sup>43</sup>	59.82 <sup>31</sup>	55.36 <sup>168</sup>	25.446 <sup>170</sup>	44.02 <sup>150</sup>
Feb. 9.1	1.057 <sup>99</sup>	67.10 <sup>30</sup>	59.51 <sup>28</sup>	53.68 <sup>210</sup>	25.276 <sup>152</sup>	42.52 <sup>169</sup>
19.1	0.958 <sup>78</sup>	67.40 <sup>13</sup>	59.23 <sup>23</sup>	51.58 <sup>237</sup>	25.124 <sup>121</sup>	40.83 <sup>182</sup>
Mar. 1.1	0.880 <sup>52</sup>	67.53 <sup>7</sup>	59.00 <sup>16</sup>	49.21 <sup>258</sup>	25.003 <sup>84</sup>	39.01 <sup>189</sup>
11.1	0.828 <sup>21</sup>	67.46 <sup>28</sup>	58.84 <sup>8</sup>	46.63 <sup>268</sup>	24.919 <sup>36</sup>	37.12 <sup>187</sup>
21.0	0.807 <sup>16</sup>	67.18 <sup>51</sup>	58.76 <sup>1</sup>	43.95 <sup>267</sup>	24.883 <sup>11</sup>	35.25 <sup>175</sup>
31.0	0.823 <sup>57</sup>	66.67 <sup>76</sup>	58.75 <sup>8</sup>	41.28 <sup>256</sup>	24.894 <sup>65</sup>	33.50 <sup>156</sup>
Apr. 10.0	0.880 <sup>98</sup>	65.91 <sup>100</sup>	58.83 <sup>16</sup>	38.72 <sup>232</sup>	24.959 <sup>118</sup>	31.94 <sup>134</sup>
19.9	0.978 <sup>141</sup>	64.91 <sup>124</sup>	58.99 <sup>25</sup>	36.40 <sup>201</sup>	25.077 <sup>172</sup>	30.60 <sup>96</sup>
29.9	1.119 <sup>180</sup>	63.67 <sup>145</sup>	59.24 <sup>32</sup>	34.39 <sup>162</sup>	25.249 <sup>224</sup>	29.64 <sup>63</sup>
May 9.9	1.299 <sup>217</sup>	62.22 <sup>164</sup>	59.56 <sup>38</sup>	32.77 <sup>121</sup>	25.473 <sup>265</sup>	29.01 <sup>22</sup>
19.9	1.516 <sup>249</sup>	60.58 <sup>181</sup>	59.94 <sup>45</sup>	31.56 <sup>72</sup>	25.738 <sup>303</sup>	28.79 <sup>16</sup>
29.8	1.765 <sup>274</sup>	58.77 <sup>191</sup>	60.39 <sup>48</sup>	30.84 <sup>22</sup>	26.041 <sup>335</sup>	28.95 <sup>58</sup>
June 8.8	2.039 <sup>292</sup>	56.86 <sup>198</sup>	60.87 <sup>51</sup>	30.62 <sup>28</sup>	26.376 <sup>353</sup>	29.53 <sup>97</sup>
18.8	2.331 <sup>303</sup>	54.88 <sup>199</sup>	61.38 <sup>53</sup>	30.90 <sup>78</sup>	26.729 <sup>365</sup>	30.50 <sup>131</sup>
28.8	2.634 <sup>304</sup>	52.89 <sup>195</sup>	61.91 <sup>52</sup>	31.68 <sup>125</sup>	27.094 <sup>366</sup>	31.81 <sup>162</sup>
July 8.7	2.938 <sup>298</sup>	50.94 <sup>186</sup>	62.43 <sup>51</sup>	32.93 <sup>170</sup>	27.460 <sup>356</sup>	33.43 <sup>194</sup>
18.7	3.236 <sup>285</sup>	49.08 <sup>170</sup>	62.94 <sup>49</sup>	34.63 <sup>208</sup>	27.816 <sup>338</sup>	35.37 <sup>216</sup>
28.7	3.521 <sup>264</sup>	47.38 <sup>153</sup>	63.43 <sup>45</sup>	36.71 <sup>244</sup>	28.154 <sup>314</sup>	37.53 <sup>232</sup>
Aug. 7.6	3.785 <sup>239</sup>	45.85 <sup>130</sup>	63.88 <sup>41</sup>	39.15 <sup>272</sup>	28.468 <sup>284</sup>	39.85 <sup>246</sup>
17.6	4.024 <sup>207</sup>	44.55 <sup>105</sup>	64.29 <sup>35</sup>	41.87 <sup>296</sup>	28.752 <sup>247</sup>	42.31 <sup>253</sup>
27.6	4.231 <sup>174</sup>	43.50 <sup>79</sup>	64.64 <sup>30</sup>	44.83 <sup>309</sup>	28.999 <sup>209</sup>	44.84 <sup>253</sup>
Sept. 6.6	4.405 <sup>139</sup>	42.71 <sup>52</sup>	64.94 <sup>24</sup>	47.92 <sup>322</sup>	29.208 <sup>168</sup>	47.37 <sup>250</sup>
16.5	4.544 <sup>102</sup>	42.19 <sup>25</sup>	65.18 <sup>17</sup>	51.14 <sup>326</sup>	29.376 <sup>127</sup>	49.87 <sup>242</sup>
26.5	4.646 <sup>68</sup>	41.94 <sup>1</sup>	65.35 <sup>11</sup>	54.40 <sup>323</sup>	29.503 <sup>87</sup>	52.29 <sup>229</sup>
Oct. 6.5	4.714 <sup>35</sup>	41.93 <sup>22</sup>	65.46 <sup>4</sup>	57.63 <sup>313</sup>	29.590 <sup>43</sup>	54.58 <sup>211</sup>
16.5	4.749 <sup>4</sup>	42.15 <sup>41</sup>	65.50 <sup>1</sup>	60.76 <sup>297</sup>	29.633 <sup>8</sup>	56.69 <sup>191</sup>
26.4	4.753 <sup>23</sup>	42.56 <sup>56</sup>	65.49 <sup>8</sup>	63.73 <sup>273</sup>	29.641 <sup>27</sup>	58.60 <sup>170</sup>
Nov. 5.4	4.730 <sup>48</sup>	43.12 <sup>68</sup>	65.41 <sup>13</sup>	66.46 <sup>245</sup>	29.614 <sup>62</sup>	60.30 <sup>140</sup>
15.4	4.682 <sup>67</sup>	43.80 <sup>76</sup>	65.28 <sup>19</sup>	68.91 <sup>207</sup>	29.552 <sup>91</sup>	61.70 <sup>111</sup>
25.3	4.615 <sup>86</sup>	44.56 <sup>80</sup>	65.09 <sup>24</sup>	70.98 <sup>166</sup>	29.461 <sup>118</sup>	62.81 <sup>76</sup>
Dec. 5.3	4.529 <sup>101</sup>	45.36 <sup>82</sup>	64.85 <sup>27</sup>	72.64 <sup>120</sup>	29.343 <sup>140</sup>	63.57 <sup>42</sup>
15.3	4.428 <sup>111</sup>	46.18 <sup>80</sup>	64.58 <sup>31</sup>	73.84 <sup>69</sup>	29.203 <sup>160</sup>	63.99 <sup>7</sup>
25.3	4.317 <sup>121</sup>	46.98 <sup>77</sup>	64.27 <sup>34</sup>	74.53 <sup>16</sup>	29.043 <sup>175</sup>	64.06 <sup>33</sup>
35.2	4.196	47.75	63.93	74.69	28.868	63.73
Mean Place	1.197	62.53	59.24	40.88	25.073	35.58
Sec δ, Tan δ	1.000	-0.027	2.018	+1.753	1.270	+0.783
L α, L δ	0.00	+0.4	+0.01	+0.4	0.00	+0.4
ω α, ω δ	0.00	+0.2	-0.11	+0.2	-0.05	+0.2
AUTHORITY			A. E.		A. E.	



# APPARENT PLACES OF STARS, 1922. 283

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Sculptoris. Mag. 4.4		$\epsilon$ Piscium. Mag. 4.5		72 Piscium. Mag. 5.7		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.	
	<sup>h</sup> 0 54	<sup>m</sup> 29 46	<sup>h</sup> 0 58	<sup>m</sup> 7 28	<sup>h</sup> 1 0	<sup>m</sup> 14 31	
Jan.	0.2 10.2 20.2 30.2	50.862 <sup>160</sup> 50.702 <sup>160</sup> 50.542 <sup>154</sup> 50.388 <sup>143</sup>	56.18 <sup>49</sup> 56.67 <sup>13</sup> 56.80 <sup>22</sup> 56.58 <sup>61</sup>	54.093 <sup>126</sup> 53.967 <sup>129</sup> 53.838 <sup>127</sup> 53.711 <sup>124</sup>	14.42 <sup>74</sup> 13.68 <sup>75</sup> 12.93 <sup>78</sup> 12.15 <sup>73</sup>	58.717 <sup>129</sup> 58.588 <sup>133</sup> 58.455 <sup>134</sup> 58.321 <sup>127</sup>	39.88 <sup>70</sup> 39.18 <sup>8</sup> 38.37 <sup>89</sup> 37.48 <sup>92</sup>
Feb.	9.1 19.1	50.245 <sup>127</sup> 50.118 <sup>104</sup>	55.97 <sup>95</sup> 55.02 <sup>127</sup>	53.587 <sup>107</sup> 53.480 <sup>86</sup>	11.42 <sup>65</sup> 10.77 <sup>55</sup>	58.194 <sup>114</sup> 58.080 <sup>94</sup>	36.56 <sup>92</sup> 35.64 <sup>88</sup>
Mar.	1.1 11.1 21.0 31.0	50.014 <sup>74</sup> 49.940 <sup>38</sup> 49.902 <sup>0</sup> 49.902 <sup>44</sup>	53.75 <sup>161</sup> 52.14 <sup>186</sup> 50.28 <sup>214</sup> 48.14 <sup>232</sup>	53.394 <sup>63</sup> 53.331 <sup>28</sup> 53.303 <sup>7</sup> 53.310 <sup>50</sup>	10.22 <sup>44</sup> 9.78 <sup>24</sup> 9.54 <sup>2</sup> 9.52 <sup>19</sup>	57.986 <sup>66</sup> 57.920 <sup>34</sup> 57.886 <sup>6</sup> 57.892 <sup>48</sup>	34.76 <sup>78</sup> 33.98 <sup>65</sup> 33.33 <sup>46</sup> 32.87 <sup>23</sup>
Apr.	10.0 19.9 29.9	49.946 <sup>91</sup> 50.037 <sup>136</sup> 50.173 <sup>180</sup>	45.82 <sup>251</sup> 43.31 <sup>263</sup> 40.68 <sup>270</sup>	53.360 <sup>91</sup> 53.451 <sup>136</sup> 53.587 <sup>174</sup>	9.71 <sup>47</sup> 10.18 <sup>69</sup> 10.87 <sup>100</sup>	57.940 <sup>92</sup> 58.032 <sup>136</sup> 58.168 <sup>180</sup>	32.64 <sup>3</sup> 32.67 <sup>30</sup> 32.97 <sup>58</sup>
May	9.9 19.9 29.8	50.353 <sup>222</sup> 50.575 <sup>258</sup> 50.833 <sup>288</sup>	37.98 <sup>269</sup> 35.29 <sup>266</sup> 32.63 <sup>253</sup>	53.761 <sup>214</sup> 53.975 <sup>246</sup> 54.221 <sup>274</sup>	11.87 <sup>121</sup> 13.08 <sup>143</sup> 14.51 <sup>163</sup>	58.348 <sup>218</sup> 58.566 <sup>253</sup> 58.819 <sup>279</sup>	33.55 <sup>87</sup> 34.42 <sup>114</sup> 35.56 <sup>138</sup>
June	8.8 18.8 28.8	51.121 <sup>311</sup> 51.432 <sup>327</sup> 51.759 <sup>333</sup>	30.10 <sup>234</sup> 27.76 <sup>212</sup> 25.64 <sup>179</sup>	54.495 <sup>289</sup> 54.784 <sup>302</sup> 55.086 <sup>309</sup>	16.14 <sup>177</sup> 17.91 <sup>185</sup> 19.76 <sup>191</sup>	59.098 <sup>298</sup> 59.396 <sup>310</sup> 59.706 <sup>313</sup>	36.94 <sup>158</sup> 38.52 <sup>176</sup> 40.28 <sup>186</sup>
July	8.7 18.7 28.7	52.092 <sup>329</sup> 52.421 <sup>317</sup> 52.738 <sup>298</sup>	23.85 <sup>146</sup> 22.39 <sup>108</sup> 21.31 <sup>64</sup>	55.395 <sup>303</sup> 55.698 <sup>289</sup> 55.987 <sup>269</sup>	21.67 <sup>191</sup> 23.58 <sup>187</sup> 25.45 <sup>175</sup>	60.019 <sup>308</sup> 60.327 <sup>294</sup> 60.621 <sup>275</sup>	42.14 <sup>194</sup> 44.08 <sup>194</sup> 46.02 <sup>191</sup>
Aug.	7.6 17.6 27.6	53.036 <sup>271</sup> 53.307 <sup>236</sup> 53.543 <sup>199</sup>	20.67 <sup>24</sup> 20.43 <sup>20</sup> 20.63 <sup>63</sup>	56.256 <sup>244</sup> 56.500 <sup>218</sup> 56.718 <sup>180</sup>	27.20 <sup>162</sup> 28.82 <sup>143</sup> 30.25 <sup>126</sup>	60.896 <sup>250</sup> 61.146 <sup>221</sup> 61.367 <sup>188</sup>	47.93 <sup>183</sup> 49.76 <sup>171</sup> 51.47 <sup>156</sup>
Sept.	6.6 16.5 26.5	53.742 <sup>160</sup> 53.902 <sup>115</sup> 54.017 <sup>73</sup>	21.26 <sup>99</sup> 22.25 <sup>132</sup> 23.57 <sup>160</sup>	56.898 <sup>151</sup> 57.049 <sup>113</sup> 57.162 <sup>80</sup>	31.51 <sup>100</sup> 32.51 <sup>79</sup> 33.30 <sup>54</sup>	61.555 <sup>152</sup> 61.707 <sup>118</sup> 61.825 <sup>84</sup>	53.03 <sup>138</sup> 54.41 <sup>117</sup> 55.58 <sup>98</sup>
Oct.	6.5 16.5 26.4	54.090 <sup>32</sup> 54.122 <sup>5</sup> 54.117 <sup>42</sup>	25.17 <sup>181</sup> 26.98 <sup>192</sup> 28.90 <sup>196</sup>	57.242 <sup>45</sup> 57.287 <sup>19</sup> 57.306 <sup>9</sup>	33.84 <sup>34</sup> 34.18 <sup>13</sup> 34.31 <sup>7</sup>	61.909 <sup>50</sup> 61.959 <sup>20</sup> 61.979 <sup>9</sup>	56.56 <sup>76</sup> 57.32 <sup>55</sup> 57.87 <sup>36</sup>
Nov.	5.4 15.4 25.3	54.075 <sup>72</sup> 54.003 <sup>98</sup> 53.905 <sup>119</sup>	30.86 <sup>191</sup> 32.77 <sup>179</sup> 34.56 <sup>161</sup>	57.297 <sup>38</sup> 57.259 <sup>61</sup> 57.198 <sup>78</sup>	34.24 <sup>20</sup> 34.04 <sup>36</sup> 33.68 <sup>49</sup>	61.970 <sup>36</sup> 61.934 <sup>58</sup> 61.876 <sup>78</sup>	58.23 <sup>16</sup> 58.39 <sup>2</sup> 58.37 <sup>20</sup>
Dec.	5.3 15.3 25.3 35.2	53.786 <sup>136</sup> 53.650 <sup>149</sup> 53.501 <sup>156</sup> 53.345	36.17 <sup>135</sup> 37.52 <sup>105</sup> 38.57 <sup>70</sup> 39.27	57.120 <sup>98</sup> 57.022 <sup>110</sup> 56.912 <sup>120</sup> 56.792	33.19 <sup>59</sup> 32.60 <sup>65</sup> 31.95 <sup>71</sup> 31.24	61.798 <sup>97</sup> 61.701 <sup>113</sup> 61.588 <sup>124</sup> 61.464	58.17 <sup>34</sup> 57.83 <sup>50</sup> 57.33 <sup>63</sup> 56.70
Mean Place	50.820	44.38	53.588	13.82	58.114	36.88	
Sec $\delta$ , Tan $\delta$	1.152	-0.572	1.009	+0.131	1.033	+0.259	
L $\alpha$ , L $\delta$	0.00	+0.4	0.00	+0.4	0.00	+0.4	
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.04	+0.2	-0.01	+0.3	-0.02	+0.3	
AUTHORITY	A. E.		A. E.				

# 284 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Phœnicis. Mag. 3.4			$\beta$ Andromedæ. Mag. 2.4			$\zeta^1$ Piscium. Mag. 5.6					
	R. A.		Dec. S.	R. A.		Dec. N.	R. A.		Dec. N.			
	h I	m 2	° 47	' 7	h I	m 5	° 35	' 12	h I	m 9	° 7	' 9
Jan.	0.3	36.021 <sup>236</sup>	88.28		22.475 <sup>169</sup>	36.08	50	39.824 <sup>124</sup>	47.78	73		
	10.2	35.785 <sup>234</sup>	88.57	29	22.306 <sup>175</sup>	35.58	80	39.700 <sup>130</sup>	47.05	74		
	20.2	35.551 <sup>224</sup>	88.37	71	22.131 <sup>175</sup>	34.78	108	39.570 <sup>130</sup>	46.31	74		
	30.2	35.327 <sup>211</sup>	87.66	117	21.956 <sup>170</sup>	33.70	135	39.440 <sup>126</sup>	45.57	70		
Feb.	9.2	35.116 <sup>187</sup>	86.49	161	21.786 <sup>148</sup>	32.35	154	39.314 <sup>115</sup>	44.87	63		
	19.1	34.929 <sup>158</sup>	84.88	203	21.638 <sup>127</sup>	30.81	168	39.199 <sup>96</sup>	44.24	54		
Mar.	1.1	34.771 <sup>120</sup>	82.85	235	21.511 <sup>92</sup>	29.13	172	39.103 <sup>71</sup>	43.70	40		
	11.1	34.651 <sup>76</sup>	80.50	266	21.419 <sup>48</sup>	27.41	170	39.032 <sup>41</sup>	43.30	22		
	21.0	34.575 <sup>28</sup>	77.84	291	21.371 <sup>5</sup>	25.71	160	38.991 <sup>3</sup>	43.08	3		
	31.0	34.547 <sup>25</sup>	74.93	308	21.366 <sup>48</sup>	24.11	142	38.988 <sup>38</sup>	43.05	21		
Apr.	10.0	34.572 <sup>83</sup>	71.85	320	21.414 <sup>102</sup>	22.69	120	39.026 <sup>81</sup>	43.26	45		
	20.0	34.655 <sup>136</sup>	68.65	326	21.516 <sup>151</sup>	21.49	87	39.107 <sup>125</sup>	43.71	71		
	29.9	34.791 <sup>193</sup>	65.39	323	21.667 <sup>206</sup>	20.62	56	39.232 <sup>166</sup>	44.42	96		
May	9.9	34.984 <sup>243</sup>	62.16	314	21.873 <sup>250</sup>	20.06	17	39.398 <sup>206</sup>	45.38	121		
	19.9	35.227 <sup>291</sup>	59.02	298	22.123 <sup>283</sup>	19.89	19	39.604 <sup>241</sup>	46.59	142		
	29.9	35.518 <sup>332</sup>	56.04	274	22.406 <sup>319</sup>	20.08	57	39.845 <sup>268</sup>	48.01	161		
June	8.8	35.850 <sup>359</sup>	53.30	243	22.725 <sup>341</sup>	20.65	94	40.113 <sup>289</sup>	49.62	175		
	18.8	36.209 <sup>382</sup>	50.87	208	23.066 <sup>352</sup>	21.59	126	40.402 <sup>301</sup>	51.37	184		
	28.8	36.591 <sup>394</sup>	48.79	163	23.418 <sup>358</sup>	22.85	156	40.703 <sup>307</sup>	53.21	190		
July	8.7	36.985 <sup>395</sup>	47.16	119	23.776 <sup>350</sup>	24.41	184	41.010 <sup>303</sup>	55.11	189		
	18.7	37.380 <sup>383</sup>	45.97	68	24.126 <sup>333</sup>	26.25	205	41.313 <sup>293</sup>	57.00	184		
	28.7	37.763 <sup>365</sup>	45.29	17	24.459 <sup>316</sup>	28.30	219	41.606 <sup>275</sup>	58.84	173		
Aug.	7.7	38.128 <sup>331</sup>	45.12	36	24.775 <sup>284</sup>	30.49	233	41.881 <sup>251</sup>	60.57	159		
	17.6	38.459 <sup>294</sup>	45.48	87	25.059 <sup>255</sup>	32.82	237	42.132 <sup>224</sup>	62.16	141		
	27.6	38.753 <sup>249</sup>	46.35	133	25.314 <sup>217</sup>	35.19	235	42.356 <sup>191</sup>	63.57	120		
Sept.	6.6	39.002 <sup>196</sup>	47.68	175	25.531 <sup>179</sup>	37.54	233	42.547 <sup>159</sup>	64.77	98		
	16.6	39.198 <sup>144</sup>	49.43	211	25.710 <sup>137</sup>	39.87	225	42.706 <sup>124</sup>	65.75	75		
	26.5	39.342 <sup>88</sup>	51.54	239	25.847 <sup>103</sup>	42.12	213	42.830 <sup>91</sup>	66.50	52		
Oct.	6.5	39.430 <sup>34</sup>	53.93	254	25.950 <sup>64</sup>	44.25	195	42.921 <sup>58</sup>	67.02	30		
	16.5	39.464 <sup>20</sup>	56.47	263	26.014 <sup>23</sup>	46.20	177	42.979 <sup>27</sup>	67.32	9		
	26.5	39.444 <sup>68</sup>	59.10	261	26.037 <sup>10</sup>	47.97	155	43.006 <sup>1</sup>	67.41	8		
Nov.	5.4	39.376 <sup>110</sup>	61.71	246	26.027 <sup>42</sup>	49.52	128	43.005 <sup>27</sup>	67.33	25		
	15.4	39.266 <sup>149</sup>	64.17	222	25.985 <sup>74</sup>	50.80	104	42.978 <sup>50</sup>	67.08	38		
	25.4	39.117 <sup>180</sup>	66.39	190	25.911 <sup>99</sup>	51.84	70	42.928 <sup>71</sup>	66.70	49		
Dec.	5.3	38.937 <sup>203</sup>	68.29	153	25.812 <sup>125</sup>	52.54	39	42.857 <sup>90</sup>	66.21	58		
	15.3	38.734 <sup>222</sup>	69.82	108	25.687 <sup>146</sup>	52.93	5	42.767 <sup>105</sup>	65.63	66		
	25.3	38.512 <sup>231</sup>	70.90	59	25.541 <sup>160</sup>	52.98	25	42.662 <sup>118</sup>	64.97	70		
	35.3	38.281	71.49		25.381	52.73		42.544	64.27			
Mean Place	36.201	71.65	21.523	26.46	39.259	47.75						
Sec $\delta$ , Tan $\delta$	1.470	-1.078	1.224	+0.706	1.008	+0.126						
L $\alpha$ , L $\delta$	-0.01	+0.4	+0.01	+0.4	0.00	+0.4						
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.07	+0.3	-0.05	+0.3	-0.01	+0.3						
AUTHORITY	A. E.			A. E.								

# APPARENT PLACES OF STARS, 1922. 285

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\theta$ Ceti. Mag. 3.8		$\delta$ Cassiopeiæ. Mag. 2.8		$\gamma$ Phœnicis. Mag. 3.4	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> I m 20	<sup>°</sup> 8 ' 34	<sup>h</sup> I m 20	<sup>°</sup> 59 ' 49	<sup>h</sup> I m 24	<sup>°</sup> 43 ' 42
Jan. 0.3	7.883 <sup>128</sup>	73.48 <sup>80</sup>	43.878 <sup>324</sup>	65.21 <sup>15</sup>	58.778 <sup>218</sup>	79.95 <sup>60</sup>
10.3	7.755 <sup>134</sup>	74.28 <sup>61</sup>	43.554 <sup>341</sup>	65.36 <sup>37</sup>	58.560 <sup>223</sup>	80.55 <sup>11</sup>
20.2	7.621 <sup>135</sup>	74.89 <sup>46</sup>	43.213 <sup>345</sup>	64.99 <sup>89</sup>	58.337 <sup>221</sup>	80.66 <sup>38</sup>
30.2	7.486 <sup>131</sup>	75.35 <sup>24</sup>	42.868 <sup>330</sup>	64.10 <sup>136</sup>	58.116 <sup>211</sup>	80.28 <sup>84</sup>
Feb. 9.2	7.355 <sup>125</sup>	75.59 <sup>3</sup>	42.538 <sup>304</sup>	62.74 <sup>178</sup>	57.905 <sup>195</sup>	79.44 <sup>129</sup>
19.1	7.230 <sup>104</sup>	75.62 <sup>16</sup>	42.234 <sup>261</sup>	60.96 <sup>214</sup>	57.710 <sup>170</sup>	78.15 <sup>171</sup>
Mar. 1.1	7.126 <sup>80</sup>	75.46 <sup>44</sup>	41.973 <sup>205</sup>	58.82 <sup>239</sup>	57.540 <sup>139</sup>	76.44 <sup>208</sup>
11.1	7.046 <sup>53</sup>	75.02 <sup>67</sup>	41.768 <sup>136</sup>	56.43 <sup>255</sup>	57.401 <sup>100</sup>	74.36 <sup>241</sup>
21.1	6.993 <sup>15</sup>	74.35 <sup>89</sup>	41.632 <sup>58</sup>	53.88 <sup>258</sup>	57.301 <sup>55</sup>	71.95 <sup>269</sup>
31.0	6.978 <sup>22</sup>	73.46 <sup>114</sup>	41.574 <sup>27</sup>	51.30 <sup>255</sup>	57.246 <sup>6</sup>	69.26 <sup>291</sup>
Apr. 10.0	7.000 <sup>67</sup>	72.32 <sup>140</sup>	41.601 <sup>109</sup>	48.75 <sup>238</sup>	57.240 <sup>48</sup>	66.35 <sup>307</sup>
20.0	7.067 <sup>107</sup>	70.92 <sup>156</sup>	41.710 <sup>195</sup>	46.37 <sup>213</sup>	57.288 <sup>102</sup>	63.28 <sup>317</sup>
30.0	7.174 <sup>153</sup>	69.36 <sup>179</sup>	41.905 <sup>273</sup>	44.24 <sup>181</sup>	57.390 <sup>157</sup>	60.11 <sup>320</sup>
May 9.9	7.327 <sup>191</sup>	67.57 <sup>195</sup>	42.178 <sup>348</sup>	42.43 <sup>140</sup>	57.547 <sup>208</sup>	56.91 <sup>316</sup>
19.9	7.518 <sup>226</sup>	65.62 <sup>204</sup>	42.526 <sup>408</sup>	41.03 <sup>99</sup>	57.755 <sup>256</sup>	53.75 <sup>304</sup>
29.9	7.744 <sup>257</sup>	63.58 <sup>208</sup>	42.934 <sup>458</sup>	40.04 <sup>51</sup>	58.011 <sup>296</sup>	50.71 <sup>285</sup>
June 8.8	8.001 <sup>280</sup>	61.50 <sup>212</sup>	43.392 <sup>493</sup>	39.53 <sup>4</sup>	58.307 <sup>330</sup>	47.86 <sup>260</sup>
18.8	8.281 <sup>293</sup>	59.38 <sup>207</sup>	43.885 <sup>517</sup>	39.49 <sup>46</sup>	58.637 <sup>355</sup>	45.26 <sup>227</sup>
28.8	8.574 <sup>301</sup>	57.31 <sup>196</sup>	44.402 <sup>526</sup>	39.95 <sup>91</sup>	58.992 <sup>370</sup>	42.99 <sup>188</sup>
July 8.8	8.875 <sup>304</sup>	55.35 <sup>184</sup>	44.928 <sup>522</sup>	40.86 <sup>134</sup>	59.362 <sup>376</sup>	41.11 <sup>145</sup>
18.7	9.179 <sup>293</sup>	53.51 <sup>162</sup>	45.450 <sup>505</sup>	42.20 <sup>175</sup>	59.738 <sup>370</sup>	39.66 <sup>97</sup>
28.7	9.472 <sup>279</sup>	51.89 <sup>137</sup>	45.955 <sup>477</sup>	43.95 <sup>213</sup>	60.108 <sup>354</sup>	38.69 <sup>46</sup>
Aug. 7.7	9.751 <sup>261</sup>	50.52 <sup>108</sup>	46.432 <sup>440</sup>	46.08 <sup>243</sup>	60.462 <sup>330</sup>	38.23 <sup>5</sup>
17.6	10.012 <sup>231</sup>	49.44 <sup>78</sup>	46.872 <sup>397</sup>	48.51 <sup>270</sup>	60.792 <sup>298</sup>	38.28 <sup>57</sup>
27.6	10.243 <sup>198</sup>	48.66 <sup>46</sup>	47.269 <sup>345</sup>	51.21 <sup>288</sup>	61.090 <sup>259</sup>	38.85 <sup>106</sup>
Sept. 6.6	10.441 <sup>170</sup>	48.20 <sup>15</sup>	47.614 <sup>289</sup>	54.09 <sup>302</sup>	61.349 <sup>214</sup>	39.91 <sup>151</sup>
16.6	10.611 <sup>132</sup>	48.05 <sup>15</sup>	47.903 <sup>232</sup>	57.11 <sup>311</sup>	61.563 <sup>165</sup>	41.42 <sup>190</sup>
26.5	10.743 <sup>100</sup>	48.20 <sup>43</sup>	48.135 <sup>170</sup>	60.22 <sup>313</sup>	61.728 <sup>114</sup>	43.32 <sup>222</sup>
Oct. 6.5	10.843 <sup>64</sup>	48.63 <sup>66</sup>	48.305 <sup>108</sup>	63.35 <sup>308</sup>	61.842 <sup>65</sup>	45.54 <sup>244</sup>
16.5	10.907 <sup>34</sup>	49.29 <sup>88</sup>	48.413 <sup>47</sup>	66.43 <sup>298</sup>	61.907 <sup>15</sup>	47.98 <sup>258</sup>
26.5	10.941 <sup>0</sup>	50.17 <sup>100</sup>	48.460 <sup>14</sup>	69.41 <sup>279</sup>	61.922 <sup>32</sup>	50.56 <sup>260</sup>
Nov. 5.4	10.941 <sup>21</sup>	51.17 <sup>111</sup>	48.446 <sup>74</sup>	72.20 <sup>257</sup>	61.890 <sup>74</sup>	53.16 <sup>252</sup>
15.4	10.920 <sup>51</sup>	52.28 <sup>114</sup>	48.372 <sup>131</sup>	74.77 <sup>226</sup>	61.816 <sup>112</sup>	55.68 <sup>234</sup>
25.4	10.869 <sup>71</sup>	53.42 <sup>113</sup>	48.241 <sup>184</sup>	77.03 <sup>186</sup>	61.704 <sup>145</sup>	58.02 <sup>208</sup>
Dec. 5.3	10.798 <sup>91</sup>	54.55 <sup>107</sup>	48.057 <sup>234</sup>	78.89 <sup>146</sup>	61.559 <sup>173</sup>	60.10 <sup>173</sup>
15.3	10.707 <sup>108</sup>	55.62 <sup>100</sup>	47.823 <sup>277</sup>	80.35 <sup>100</sup>	61.386 <sup>194</sup>	61.83 <sup>133</sup>
25.3	10.599 <sup>122</sup>	56.62 <sup>86</sup>	47.546 <sup>312</sup>	81.35 <sup>48</sup>	61.192 <sup>210</sup>	63.16 <sup>87</sup>
35.3	10.477	57.48	47.234	81.83	60.982	64.03
Mean Place	7.434	67.57	41.965	50.19	58.704	63.42
Sec $\delta$ , Tan $\delta$	1.011	-0.151	1.990	+1.720	1.384	-0.956
L $\alpha$ , L $\delta$	0.00	+0.4	+0.02	+0.4	-0.01	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.01	+0.3	-0.11	+0.3	+0.06	+0.4
AUTHORITY	A. E.		A. E.		A. N.	

## 286 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\eta$ Piscium. Mag. 3.7		$\alpha$ Eridani. Mag. 0.6		$\nu$ Piscium. Mag. 4.7	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> I 27	<sup>°</sup> <sup>'</sup> 14 56	<sup>h</sup> <sup>m</sup> I 34	<sup>°</sup> <sup>'</sup> 57 37	<sup>h</sup> <sup>m</sup> I 37	<sup>°</sup> <sup>'</sup> 5 5
Jan. 0.3	19.132 <sup>128</sup>	41.07 <sup>65</sup>	48.565 <sup>333</sup>	77.67 <sup>50</sup>	22.903 <sup>119</sup>	34.10 <sup>72</sup>
10.3	19.004 <sup>137</sup>	40.42 <sup>72</sup>	48.232 <sup>340</sup>	78.17 <sup>7</sup>	22.784 <sup>131</sup>	33.38 <sup>71</sup>
20.2	18.867 <sup>141</sup>	39.70 <sup>81</sup>	47.892 <sup>335</sup>	78.10 <sup>62</sup>	22.653 <sup>137</sup>	32.67 <sup>67</sup>
30.2	18.726 <sup>140</sup>	38.89 <sup>84</sup>	47.557 <sup>323</sup>	77.48 <sup>115</sup>	22.516 <sup>138</sup>	32.00 <sup>61</sup>
Feb. 9.2	18.586 <sup>128</sup>	38.05 <sup>86</sup>	47.234 <sup>298</sup>	76.33 <sup>167</sup>	22.378 <sup>131</sup>	31.39 <sup>52</sup>
19.2	18.458 <sup>115</sup>	37.19 <sup>82</sup>	46.936 <sup>266</sup>	74.66 <sup>213</sup>	22.247 <sup>116</sup>	30.87 <sup>41</sup>
Mar. 1.1	18.343 <sup>89</sup>	36.37 <sup>76</sup>	46.670 <sup>222</sup>	72.53 <sup>253</sup>	22.131 <sup>94</sup>	30.46 <sup>27</sup>
11.1	18.254 <sup>59</sup>	35.61 <sup>62</sup>	46.448 <sup>171</sup>	70.00 <sup>285</sup>	22.037 <sup>66</sup>	30.19 <sup>10</sup>
21.1	18.195 <sup>20</sup>	34.99 <sup>49</sup>	46.277 <sup>113</sup>	67.15 <sup>314</sup>	21.971 <sup>31</sup>	30.09 <sup>9</sup>
31.0	18.175 <sup>20</sup>	34.50 <sup>27</sup>	46.164 <sup>48</sup>	64.01 <sup>337</sup>	21.940 <sup>9</sup>	30.18 <sup>31</sup>
Apr. 10.0	18.195 <sup>69</sup>	34.23 <sup>2</sup>	46.116 <sup>22</sup>	60.64 <sup>350</sup>	21.949 <sup>53</sup>	30.49 <sup>55</sup>
20.0	18.264 <sup>111</sup>	34.21 <sup>20</sup>	46.138 <sup>90</sup>	57.14 <sup>355</sup>	22.002 <sup>97</sup>	31.04 <sup>78</sup>
30.0	18.375 <sup>156</sup>	34.41 <sup>50</sup>	46.228 <sup>161</sup>	53.59 <sup>352</sup>	22.099 <sup>141</sup>	31.82 <sup>102</sup>
May 9.9	18.531 <sup>198</sup>	34.91 <sup>75</sup>	46.389 <sup>230</sup>	50.07 <sup>341</sup>	22.240 <sup>182</sup>	32.84 <sup>125</sup>
19.9	18.729 <sup>236</sup>	35.66 <sup>103</sup>	46.619 <sup>292</sup>	46.66 <sup>325</sup>	22.422 <sup>219</sup>	34.09 <sup>144</sup>
29.9	18.965 <sup>265</sup>	36.69 <sup>124</sup>	46.911 <sup>349</sup>	43.41 <sup>300</sup>	22.641 <sup>251</sup>	35.53 <sup>162</sup>
June 8.9	19.230 <sup>289</sup>	37.93 <sup>146</sup>	47.260 <sup>396</sup>	40.41 <sup>266</sup>	22.892 <sup>275</sup>	37.15 <sup>174</sup>
18.8	19.519 <sup>304</sup>	39.39 <sup>163</sup>	47.656 <sup>431</sup>	37.75 <sup>228</sup>	23.167 <sup>293</sup>	38.89 <sup>183</sup>
28.8	19.823 <sup>311</sup>	41.02 <sup>173</sup>	48.087 <sup>458</sup>	35.47 <sup>181</sup>	23.460 <sup>302</sup>	40.72 <sup>185</sup>
July 8.8	20.134 <sup>311</sup>	42.75 <sup>182</sup>	48.545 <sup>469</sup>	33.66 <sup>131</sup>	23.762 <sup>303</sup>	42.57 <sup>184</sup>
18.7	20.445 <sup>303</sup>	44.57 <sup>186</sup>	49.014 <sup>470</sup>	32.35 <sup>76</sup>	24.065 <sup>297</sup>	44.41 <sup>177</sup>
28.7	20.748 <sup>286</sup>	46.43 <sup>184</sup>	49.484 <sup>456</sup>	31.59 <sup>19</sup>	24.362 <sup>283</sup>	46.18 <sup>166</sup>
Aug. 7.7	21.034 <sup>266</sup>	48.27 <sup>176</sup>	49.940 <sup>429</sup>	31.40 <sup>35</sup>	24.645 <sup>265</sup>	47.84 <sup>149</sup>
17.7	21.300 <sup>240</sup>	50.03 <sup>166</sup>	50.369 <sup>392</sup>	31.75 <sup>94</sup>	24.910 <sup>240</sup>	49.33 <sup>131</sup>
27.6	21.540 <sup>209</sup>	51.69 <sup>151</sup>	50.761 <sup>342</sup>	32.69 <sup>146</sup>	25.150 <sup>212</sup>	50.64 <sup>108</sup>
Sept. 6.6	21.749 <sup>179</sup>	53.20 <sup>133</sup>	51.103 <sup>285</sup>	34.15 <sup>195</sup>	25.362 <sup>182</sup>	51.72 <sup>85</sup>
16.6	21.928 <sup>144</sup>	54.53 <sup>117</sup>	51.388 <sup>220</sup>	36.10 <sup>235</sup>	25.544 <sup>149</sup>	52.57 <sup>60</sup>
26.6	22.072 <sup>114</sup>	55.70 <sup>95</sup>	51.608 <sup>153</sup>	38.45 <sup>266</sup>	25.693 <sup>117</sup>	53.17 <sup>37</sup>
Oct. 6.5	22.186 <sup>81</sup>	56.65 <sup>76</sup>	51.761 <sup>83</sup>	41.11 <sup>290</sup>	25.810 <sup>86</sup>	53.54 <sup>14</sup>
16.5	22.267 <sup>46</sup>	57.41 <sup>57</sup>	51.844 <sup>12</sup>	44.01 <sup>300</sup>	25.896 <sup>55</sup>	53.68 <sup>6</sup>
26.5	22.313 <sup>19</sup>	57.98 <sup>37</sup>	51.856 <sup>58</sup>	47.01 <sup>299</sup>	25.951 <sup>25</sup>	53.62 <sup>23</sup>
Nov. 5.4	22.332 <sup>11</sup>	58.35 <sup>20</sup>	51.798 <sup>117</sup>	50.00 <sup>285</sup>	25.976 <sup>2</sup>	53.39 <sup>39</sup>
15.4	22.321 <sup>35</sup>	58.55 <sup>3</sup>	51.681 <sup>176</sup>	52.85 <sup>263</sup>	25.974 <sup>28</sup>	53.00 <sup>50</sup>
25.4	22.286 <sup>62</sup>	58.58 <sup>14</sup>	51.505 <sup>225</sup>	55.48 <sup>230</sup>	25.946 <sup>52</sup>	52.50 <sup>59</sup>
Dec. 5.4	22.224 <sup>84</sup>	58.44 <sup>29</sup>	51.280 <sup>267</sup>	57.78 <sup>184</sup>	25.894 <sup>74</sup>	51.91 <sup>65</sup>
15.3	22.140 <sup>102</sup>	58.15 <sup>44</sup>	51.013 <sup>297</sup>	59.62 <sup>139</sup>	25.820 <sup>95</sup>	51.26 <sup>70</sup>
25.3	22.038 <sup>118</sup>	57.71 <sup>54</sup>	50.716 <sup>323</sup>	61.01 <sup>85</sup>	25.725 <sup>112</sup>	50.56 <sup>70</sup>
35.3	21.920	57.17	50.393	61.86	25.613	49.86
Mean Place	18.368	39.11	48.631	58.08	22.204	35.99
Sec $\delta$ , Tan $\delta$	1.035	+0.267	1.868	-1.578	1.004	+0.089
L $\alpha$ , L $\delta$	0.00	+0.4	-0.02	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.02	+0.4	+0.10	+0.4	-0.01	+0.4
AUTHORITY	A. E.		A. E.		A. N.	

# APPARENT PLACES OF STARS, 1922. 287

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	o Piscium. Mag. 4.5		ζ Ceti. Mag. 3.9		ε Cassiopeiæ. Mag. 3.4	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> I 41	<sup>°</sup> <sup>'</sup> 8 45	<sup>h</sup> <sup>m</sup> I 47	<sup>°</sup> <sup>'</sup> 10 42	<sup>h</sup> <sup>m</sup> I 48	<sup>°</sup> <sup>'</sup> 63 17
Jan. 0.3	17.110 <sup>121</sup>	55.48 <sup>67</sup>	37.177 <sup>128</sup>	78.84 <sup>86</sup>	48.40 <sup>36</sup>	26.24 <sup>56</sup>
10.3	16.989 <sup>134</sup>	54.81 <sup>69</sup>	37.049 <sup>137</sup>	79.70 <sup>68</sup>	48.04 <sup>38</sup>	26.80 <sup>6</sup>
20.2	16.855 <sup>139</sup>	54.12 <sup>70</sup>	36.912 <sup>145</sup>	80.38 <sup>49</sup>	47.66 <sup>40</sup>	26.86 <sup>51</sup>
30.2	16.716 <sup>141</sup>	53.42 <sup>69</sup>	36.767 <sup>145</sup>	80.87 <sup>26</sup>	47.26 <sup>40</sup>	26.35 <sup>102</sup>
Feb. 9.2	16.575 <sup>132</sup>	52.73 <sup>62</sup>	36.622 <sup>139</sup>	81.13 <sup>0</sup>	46.86 <sup>38</sup>	25.33 <sup>148</sup>
19.2	16.443 <sup>123</sup>	52.11 <sup>55</sup>	36.483 <sup>128</sup>	81.13 <sup>22</sup>	46.48 <sup>33</sup>	23.85 <sup>190</sup>
Mar. 1.1	16.320 <sup>96</sup>	51.56 <sup>45</sup>	36.355 <sup>107</sup>	80.91 <sup>48</sup>	46.15 <sup>29</sup>	21.95 <sup>224</sup>
11.1	16.224 <sup>70</sup>	51.11 <sup>29</sup>	36.248 <sup>78</sup>	80.43 <sup>75</sup>	45.86 <sup>20</sup>	19.71 <sup>246</sup>
21.1	16.154 <sup>33</sup>	50.82 <sup>11</sup>	36.170 <sup>42</sup>	79.68 <sup>97</sup>	45.66 <sup>13</sup>	17.25 <sup>259</sup>
31.0	16.121 <sup>6</sup>	50.71 <sup>8</sup>	36.128 <sup>6</sup>	78.71 <sup>124</sup>	45.53 <sup>4</sup>	14.66 <sup>261</sup>
Apr. 10.0	16.127 <sup>52</sup>	50.79 <sup>33</sup>	36.122 <sup>36</sup>	77.47 <sup>146</sup>	45.49 <sup>6</sup>	12.05 <sup>255</sup>
20.0	16.179 <sup>93</sup>	51.12 <sup>58</sup>	36.158 <sup>82</sup>	76.01 <sup>169</sup>	45.55 <sup>16</sup>	9.50 <sup>236</sup>
30.0	16.272 <sup>140</sup>	51.70 <sup>81</sup>	36.240 <sup>123</sup>	74.32 <sup>188</sup>	45.71 <sup>24</sup>	7.14 <sup>209</sup>
May 9.9	16.412 <sup>183</sup>	52.51 <sup>104</sup>	36.363 <sup>167</sup>	72.44 <sup>203</sup>	45.95 <sup>34</sup>	5.05 <sup>177</sup>
19.9	16.595 <sup>218</sup>	53.55 <sup>124</sup>	36.530 <sup>207</sup>	70.41 <sup>209</sup>	46.29 <sup>40</sup>	3.28 <sup>138</sup>
29.9	16.813 <sup>251</sup>	54.79 <sup>146</sup>	36.737 <sup>240</sup>	68.32 <sup>219</sup>	46.69 <sup>47</sup>	1.90 <sup>93</sup>
June 8.9	17.064 <sup>276</sup>	56.25 <sup>161</sup>	36.977 <sup>267</sup>	66.13 <sup>219</sup>	47.16 <sup>52</sup>	0.97 <sup>47</sup>
18.8	17.340 <sup>294</sup>	57.86 <sup>171</sup>	37.244 <sup>285</sup>	63.94 <sup>215</sup>	47.68 <sup>56</sup>	0.50 <sup>1</sup>
28.8	17.634 <sup>303</sup>	59.57 <sup>179</sup>	37.529 <sup>297</sup>	61.79 <sup>202</sup>	48.24 <sup>57</sup>	0.49 <sup>48</sup>
July 8.8	17.937 <sup>305</sup>	61.36 <sup>182</sup>	37.826 <sup>302</sup>	59.77 <sup>185</sup>	48.81 <sup>58</sup>	0.97 <sup>94</sup>
18.7	18.242 <sup>301</sup>	63.18 <sup>178</sup>	38.128 <sup>300</sup>	57.92 <sup>165</sup>	49.39 <sup>58</sup>	1.91 <sup>136</sup>
28.7	18.543 <sup>287</sup>	64.96 <sup>170</sup>	38.428 <sup>289</sup>	56.27 <sup>138</sup>	49.97 <sup>55</sup>	3.27 <sup>176</sup>
Aug. 7.7	18.830 <sup>267</sup>	66.66 <sup>160</sup>	38.717 <sup>272</sup>	54.89 <sup>112</sup>	50.52 <sup>52</sup>	5.03 <sup>212</sup>
17.7	19.097 <sup>246</sup>	68.26 <sup>143</sup>	38.989 <sup>250</sup>	53.77 <sup>75</sup>	51.04 <sup>48</sup>	7.15 <sup>243</sup>
27.6	19.343 <sup>217</sup>	69.69 <sup>123</sup>	39.239 <sup>222</sup>	53.02 <sup>42</sup>	51.52 <sup>43</sup>	9.58 <sup>267</sup>
Sept. 6.6	19.560 <sup>185</sup>	70.92 <sup>102</sup>	39.461 <sup>188</sup>	52.60 <sup>8</sup>	51.95 <sup>37</sup>	12.25 <sup>288</sup>
16.6	19.745 <sup>157</sup>	71.94 <sup>81</sup>	39.649 <sup>160</sup>	52.52 <sup>24</sup>	52.32 <sup>31</sup>	15.13 <sup>302</sup>
26.6	19.902 <sup>124</sup>	72.75 <sup>59</sup>	39.809 <sup>125</sup>	52.76 <sup>55</sup>	52.63 <sup>25</sup>	18.15 <sup>311</sup>
Oct. 6.5	20.026 <sup>90</sup>	73.34 <sup>36</sup>	39.934 <sup>92</sup>	53.31 <sup>82</sup>	52.88 <sup>19</sup>	21.26 <sup>313</sup>
16.5	20.116 <sup>61</sup>	73.70 <sup>16</sup>	40.026 <sup>58</sup>	54.13 <sup>100</sup>	53.07 <sup>11</sup>	24.39 <sup>308</sup>
26.5	20.177 <sup>31</sup>	73.86 <sup>2</sup>	40.084 <sup>28</sup>	55.13 <sup>118</sup>	53.18 <sup>4</sup>	27.47 <sup>297</sup>
Nov. 5.4	20.208 <sup>4</sup>	73.84 <sup>15</sup>	40.112 <sup>2</sup>	56.31 <sup>127</sup>	53.22 <sup>3</sup>	30.44 <sup>279</sup>
15.4	20.212 <sup>25</sup>	73.69 <sup>32</sup>	40.110 <sup>26</sup>	57.58 <sup>133</sup>	53.19 <sup>9</sup>	33.23 <sup>255</sup>
25.4	20.187 <sup>47</sup>	73.37 <sup>42</sup>	40.084 <sup>54</sup>	58.91 <sup>129</sup>	53.10 <sup>17</sup>	35.78 <sup>222</sup>
Dec. 5.4	20.140 <sup>74</sup>	72.95 <sup>53</sup>	40.030 <sup>77</sup>	60.20 <sup>123</sup>	52.93 <sup>23</sup>	38.00 <sup>183</sup>
15.3	20.066 <sup>94</sup>	72.42 <sup>59</sup>	39.953 <sup>98</sup>	61.43 <sup>112</sup>	52.70 <sup>28</sup>	39.83 <sup>141</sup>
25.3	19.972 <sup>111</sup>	71.83 <sup>64</sup>	39.855 <sup>116</sup>	62.55 <sup>98</sup>	52.42 <sup>34</sup>	41.24 <sup>89</sup>
35.3	19.861	71.19	39.739	63.53	52.08	42.13
Mean Place	16.344	56.30	36.585	71.16	45.93	12.31
Sec δ, Tan δ	1.012	+0.154	1.018	-0.189	2.225	+1.987
L α, L δ	0.00	+0.4	0.00	+0.4	+0.02	+0.4
ω α, ω δ	-0.01	+0.4	+0.01	+0.5	-0.12	+0.5
AUTHORITY	A. E.		A. E.		A. E.	

# 288 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Arietis. Mag. 2.7		$\alpha$ Hydri. Mag. 3.0		$\gamma$ Ceti. Mag. 4.2	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> I 50	<sup>m</sup> 20 25	<sup>h</sup> I 56	<sup>m</sup> 61 56	<sup>h</sup> I 56	<sup>m</sup> 21 26
Jan. 0.3	20.582 <sup>129</sup>	41.00 47	18.38 <sup>40</sup>	77.27 <sup>70</sup>	20.288 <sup>140</sup>	89.91 <sup>96</sup>
10.3	20.453 <sup>144</sup>	40.53 61	17.98 <sup>40</sup>	77.97 <sup>14</sup>	20.148 <sup>153</sup>	90.87 <sup>67</sup>
20.3	20.309 <sup>152</sup>	39.92 74	17.58 <sup>41</sup>	78.11 <sup>45</sup>	19.995 <sup>161</sup>	91.54 <sup>36</sup>
30.2	20.157 <sup>155</sup>	39.18 85	17.17 <sup>40</sup>	77.66 <sup>101</sup>	19.834 <sup>161</sup>	91.90 <sup>1</sup>
Feb. 9.2	20.002 <sup>148</sup>	38.33 94	16.77 <sup>38</sup>	76.65 <sup>153</sup>	19.673 <sup>158</sup>	91.91 <sup>29</sup>
19.2	19.854 <sup>134</sup>	37.39 95	16.39 <sup>34</sup>	75.12 <sup>204</sup>	19.515 <sup>143</sup>	91.62 <sup>64</sup>
Mar. 1.1	19.720 <sup>115</sup>	36.44 93	16.05 <sup>30</sup>	73.08 <sup>246</sup>	19.372 <sup>123</sup>	90.98 <sup>96</sup>
11.1	19.605 <sup>81</sup>	35.51 86	15.75 <sup>25</sup>	70.62 <sup>284</sup>	19.249 <sup>94</sup>	90.02 <sup>125</sup>
21.1	19.524 <sup>46</sup>	34.65 77	15.50 <sup>18</sup>	67.78 <sup>312</sup>	19.155 <sup>62</sup>	88.77 <sup>152</sup>
31.1	19.478 <sup>2</sup>	33.88 61	15.32 <sup>11</sup>	64.66 <sup>339</sup>	19.093 <sup>21</sup>	87.25 <sup>181</sup>
Apr. 10.0	19.476 <sup>48</sup>	33.27 38	15.21 <sup>4</sup>	61.27 <sup>353</sup>	19.072 <sup>22</sup>	85.44 <sup>205</sup>
20.0	19.524 <sup>91</sup>	32.89 15	15.17 <sup>5</sup>	57.74 <sup>362</sup>	19.094 <sup>68</sup>	83.39 <sup>224</sup>
30.0	19.615 <sup>139</sup>	32.74 9	15.22 <sup>12</sup>	54.12 <sup>361</sup>	19.162 <sup>115</sup>	81.15 <sup>237</sup>
May 10.0	19.754 <sup>184</sup>	32.83 39	15.34 <sup>21</sup>	50.51 <sup>356</sup>	19.277 <sup>158</sup>	78.78 <sup>250</sup>
19.9	19.938 <sup>225</sup>	33.22 65	15.55 <sup>28</sup>	46.95 <sup>337</sup>	19.435 <sup>200</sup>	76.28 <sup>255</sup>
29.9	20.163 <sup>260</sup>	33.87 92	15.83 <sup>35</sup>	43.58 <sup>315</sup>	19.635 <sup>237</sup>	73.73 <sup>254</sup>
June 8.9	20.423 <sup>287</sup>	34.79 113	16.18 <sup>40</sup>	40.43 <sup>283</sup>	19.872 <sup>266</sup>	71.19 <sup>246</sup>
18.8	20.710 <sup>305</sup>	35.92 137	16.58 <sup>46</sup>	37.60 <sup>243</sup>	20.138 <sup>290</sup>	68.73 <sup>232</sup>
28.8	21.015 <sup>315</sup>	37.29 152	17.04 <sup>49</sup>	35.17 <sup>198</sup>	20.428 <sup>302</sup>	66.41 <sup>214</sup>
July 8.8	21.330 <sup>320</sup>	38.81 168	17.53 <sup>51</sup>	33.19 <sup>148</sup>	20.730 <sup>311</sup>	64.27 <sup>187</sup>
18.8	21.650 <sup>313</sup>	40.49 175	18.04 <sup>52</sup>	31.71 <sup>93</sup>	21.041 <sup>310</sup>	62.40 <sup>158</sup>
28.7	21.963 <sup>304</sup>	42.24 178	18.56 <sup>51</sup>	30.78 <sup>35</sup>	21.351 <sup>302</sup>	60.82 <sup>122</sup>
Aug. 7.7	22.267 <sup>282</sup>	44.02 178	19.07 <sup>50</sup>	30.43 <sup>24</sup>	21.653 <sup>285</sup>	59.60 <sup>82</sup>
17.7	22.549 <sup>263</sup>	45.80 172	19.57 <sup>45</sup>	30.67 <sup>85</sup>	21.938 <sup>264</sup>	58.78 <sup>42</sup>
27.6	22.812 <sup>233</sup>	47.52 166	20.02 <sup>41</sup>	31.52 <sup>137</sup>	22.202 <sup>235</sup>	58.36 <sup>0</sup>
Sept. 6.6	23.045 <sup>203</sup>	49.18 151	20.43 <sup>35</sup>	32.89 <sup>190</sup>	22.437 <sup>205</sup>	58.36 <sup>40</sup>
16.6	23.248 <sup>171</sup>	50.69 138	20.78 <sup>28</sup>	34.79 <sup>237</sup>	22.642 <sup>171</sup>	58.76 <sup>79</sup>
26.6	23.419 <sup>139</sup>	52.07 122	21.06 <sup>21</sup>	37.16 <sup>270</sup>	22.813 <sup>136</sup>	59.55 <sup>112</sup>
Oct. 6.5	23.558 <sup>109</sup>	53.29 104	21.27 <sup>13</sup>	39.86 <sup>296</sup>	22.949 <sup>100</sup>	60.67 <sup>140</sup>
16.5	23.667 <sup>74</sup>	54.33 87	21.40 <sup>5</sup>	42.82 <sup>312</sup>	23.049 <sup>65</sup>	62.07 <sup>163</sup>
26.5	23.741 <sup>42</sup>	55.20 68	21.45 <sup>3</sup>	45.94 <sup>313</sup>	23.114 <sup>31</sup>	63.70 <sup>176</sup>
Nov. 5.5	23.783 <sup>15</sup>	55.88 50	21.42 <sup>11</sup>	49.07 <sup>305</sup>	23.145 <sup>2</sup>	65.46 <sup>183</sup>
15.4	23.798 <sup>16</sup>	56.38 32	21.31 <sup>18</sup>	52.12 <sup>283</sup>	23.143 <sup>32</sup>	67.29 <sup>183</sup>
25.4	23.782 <sup>43</sup>	56.70 18	21.13 <sup>25</sup>	54.95 <sup>251</sup>	23.111 <sup>59</sup>	69.12 <sup>173</sup>
Dec. 5.4	23.739 <sup>70</sup>	56.88 3	20.88 <sup>29</sup>	57.46 <sup>208</sup>	23.052 <sup>86</sup>	70.85 <sup>160</sup>
15.3	23.669 <sup>96</sup>	56.85 19	20.59 <sup>34</sup>	59.54 <sup>161</sup>	22.966 <sup>109</sup>	72.45 <sup>137</sup>
25.3	23.573 <sup>115</sup>	56.66 35	20.25 <sup>38</sup>	61.15 <sup>106</sup>	22.857 <sup>129</sup>	73.82 <sup>114</sup>
35.3	23.458	56.31	19.87	62.21	22.728	74.96
Mean Place	19.603	38.35	18.25	56.64	19.746	78.56
Sec $\delta$ , Tan $\delta$	1.067	+0.372	2.127	-1.877	1.074	-0.393
L $\alpha$ , L $\delta$	0.00	+0.4	-0.02	+0.3	-0.01	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.02	+0.5	+0.11	+0.5	+0.02	+0.5
AUTHORITY	A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 289

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\gamma$ Andromedæ. Mag. 2.3		$\alpha$ Arietis. Mag. 2.2		$\beta$ Trianguli. Mag. 3.1	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	h m I 59	° 41 57	h m 2 2	° 23 5	h m 2 4	° 34 37
Jan. 0.3	7.713 <sup>179</sup>	30.76 <sup>13</sup>	47.405 <sup>128</sup>	42.34 <sup>36</sup>	55.109 <sup>150</sup>	14.69 <sup>4</sup>
10.3	7.534 <sup>197</sup>	30.89 <sup>26</sup>	47.277 <sup>147</sup>	41.98 <sup>53</sup>	54.959 <sup>170</sup>	14.65 <sup>35</sup>
20.3	7.337 <sup>210</sup>	30.63 <sup>64</sup>	47.130 <sup>155</sup>	41.45 <sup>68</sup>	54.789 <sup>183</sup>	14.30 <sup>60</sup>
30.2	7.127 <sup>214</sup>	29.99 <sup>96</sup>	46.975 <sup>164</sup>	40.77 <sup>82</sup>	54.606 <sup>190</sup>	13.70 <sup>89</sup>
Feb. 9.2	6.913 <sup>210</sup>	29.03 <sup>121</sup>	46.811 <sup>158</sup>	39.95 <sup>92</sup>	54.416 <sup>184</sup>	12.81 <sup>111</sup>
19.2	6.703 <sup>190</sup>	27.82 <sup>149</sup>	46.653 <sup>145</sup>	39.03 <sup>98</sup>	54.232 <sup>172</sup>	11.70 <sup>125</sup>
Mar. 1.1	6.513 <sup>161</sup>	26.33 <sup>166</sup>	46.508 <sup>127</sup>	38.05 <sup>100</sup>	54.060 <sup>142</sup>	10.45 <sup>141</sup>
11.1	6.352 <sup>121</sup>	24.67 <sup>177</sup>	46.381 <sup>91</sup>	37.05 <sup>99</sup>	53.918 <sup>114</sup>	9.04 <sup>145</sup>
21.1	6.231 <sup>74</sup>	22.90 <sup>179</sup>	46.290 <sup>59</sup>	36.06 <sup>87</sup>	53.804 <sup>68</sup>	7.59 <sup>144</sup>
31.1	6.157 <sup>20</sup>	21.11 <sup>173</sup>	46.231 <sup>13</sup>	35.19 <sup>73</sup>	53.736 <sup>21</sup>	6.15 <sup>135</sup>
Apr. 10.0	6.137 <sup>41</sup>	19.38 <sup>160</sup>	46.218 <sup>30</sup>	34.46 <sup>57</sup>	53.715 <sup>31</sup>	4.80 <sup>125</sup>
20.0	6.178 <sup>98</sup>	17.78 <sup>139</sup>	46.248 <sup>83</sup>	33.89 <sup>33</sup>	53.746 <sup>87</sup>	3.55 <sup>100</sup>
30.0	6.276 <sup>158</sup>	16.39 <sup>116</sup>	46.331 <sup>131</sup>	33.56 <sup>10</sup>	53.833 <sup>141</sup>	2.55 <sup>76</sup>
May 10.0	6.434 <sup>215</sup>	15.23 <sup>82</sup>	46.462 <sup>176</sup>	33.46 <sup>17</sup>	53.974 <sup>191</sup>	1.79 <sup>46</sup>
19.9	6.649 <sup>264</sup>	14.41 <sup>49</sup>	46.638 <sup>219</sup>	33.63 <sup>44</sup>	54.165 <sup>237</sup>	1.33 <sup>17</sup>
29.9	6.913 <sup>303</sup>	13.92 <sup>15</sup>	46.857 <sup>255</sup>	34.07 <sup>73</sup>	54.402 <sup>280</sup>	1.16 <sup>17</sup>
June 8.9	7.216 <sup>340</sup>	13.77 <sup>23</sup>	47.112 <sup>285</sup>	34.80 <sup>97</sup>	54.682 <sup>306</sup>	1.33 <sup>49</sup>
18.8	7.556 <sup>364</sup>	14.00 <sup>62</sup>	47.397 <sup>301</sup>	35.77 <sup>121</sup>	54.988 <sup>335</sup>	1.82 <sup>81</sup>
28.8	7.920 <sup>377</sup>	14.62 <sup>93</sup>	47.698 <sup>319</sup>	36.98 <sup>140</sup>	55.323 <sup>348</sup>	2.63 <sup>107</sup>
July 8.8	8.297 <sup>387</sup>	15.55 <sup>123</sup>	48.017 <sup>326</sup>	38.38 <sup>155</sup>	55.671 <sup>353</sup>	3.70 <sup>133</sup>
18.8	8.684 <sup>379</sup>	16.78 <sup>153</sup>	48.343 <sup>321</sup>	39.93 <sup>166</sup>	56.024 <sup>354</sup>	5.03 <sup>156</sup>
28.7	9.063 <sup>365</sup>	18.31 <sup>177</sup>	48.664 <sup>309</sup>	41.59 <sup>173</sup>	56.378 <sup>338</sup>	6.59 <sup>174</sup>
Aug. 7.7	9.428 <sup>348</sup>	20.08 <sup>200</sup>	48.973 <sup>295</sup>	43.32 <sup>175</sup>	56.716 <sup>324</sup>	8.33 <sup>187</sup>
17.7	9.776 <sup>322</sup>	22.08 <sup>210</sup>	49.268 <sup>274</sup>	45.07 <sup>174</sup>	57.040 <sup>299</sup>	10.20 <sup>195</sup>
27.7	10.098 <sup>290</sup>	24.18 <sup>222</sup>	49.542 <sup>246</sup>	46.81 <sup>168</sup>	57.339 <sup>275</sup>	12.15 <sup>200</sup>
Sept. 6.6	10.388 <sup>256</sup>	26.40 <sup>227</sup>	49.788 <sup>218</sup>	48.49 <sup>159</sup>	57.614 <sup>238</sup>	14.15 <sup>201</sup>
16.6	10.644 <sup>219</sup>	28.67 <sup>229</sup>	50.006 <sup>185</sup>	50.08 <sup>146</sup>	57.852 <sup>208</sup>	16.16 <sup>197</sup>
26.6	10.863 <sup>182</sup>	30.96 <sup>228</sup>	50.191 <sup>158</sup>	51.54 <sup>133</sup>	58.060 <sup>173</sup>	18.13 <sup>190</sup>
Oct. 6.5	11.045 <sup>140</sup>	33.24 <sup>219</sup>	50.349 <sup>123</sup>	52.87 <sup>116</sup>	58.233 <sup>139</sup>	20.03 <sup>180</sup>
16.5	11.185 <sup>101</sup>	35.43 <sup>209</sup>	50.472 <sup>89</sup>	54.03 <sup>100</sup>	58.372 <sup>102</sup>	21.83 <sup>169</sup>
26.5	11.286 <sup>60</sup>	37.52 <sup>194</sup>	50.561 <sup>59</sup>	55.03 <sup>84</sup>	58.474 <sup>65</sup>	23.52 <sup>152</sup>
Nov. 5.5	11.346 <sup>20</sup>	39.46 <sup>177</sup>	50.620 <sup>29</sup>	55.87 <sup>66</sup>	58.539 <sup>29</sup>	25.04 <sup>135</sup>
15.4	11.366 <sup>21</sup>	41.23 <sup>153</sup>	50.649 <sup>5</sup>	56.53 <sup>49</sup>	58.568 <sup>6</sup>	26.39 <sup>116</sup>
25.4	11.345 <sup>58</sup>	42.76 <sup>130</sup>	50.644 <sup>34</sup>	57.02 <sup>30</sup>	58.562 <sup>39</sup>	27.55 <sup>92</sup>
Dec. 5.4	11.287 <sup>94</sup>	44.06 <sup>99</sup>	50.610 <sup>64</sup>	57.32 <sup>17</sup>	58.523 <sup>74</sup>	28.47 <sup>67</sup>
15.3	11.193 <sup>130</sup>	45.05 <sup>68</sup>	50.546 <sup>91</sup>	57.49 <sup>6</sup>	58.449 <sup>107</sup>	29.14 <sup>40</sup>
25.3	11.063 <sup>161</sup>	45.73 <sup>33</sup>	50.455 <sup>112</sup>	57.43 <sup>24</sup>	58.342 <sup>131</sup>	29.54 <sup>16</sup>
35.3	10.902	46.06	50.343	57.19	58.211	29.70
Mean Place	6.228	22.23	46.314	39.49	53.780	8.50
Sec $\delta$ , Tan $\delta$	1.345	+0.899	1.087	+0.426	1.215	+0.690
L $\alpha$ , L $\delta$	+0.01	+0.3	+0.01	+0.3	+0.01	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.05	+0.5	-0.02	+0.5	-0.04	+0.5
AUTHORITY	A. E.		A. E.		A. E.	

## 290 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\xi^1$ Ceti. Mag. 4.5		67 Ceti. Mag. 5.7		$\phi$ Eridani. Mag. 3.8		
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.	
	<sup>h</sup> <sup>m</sup> 2 8	<sup>o</sup> 28	<sup>h</sup> <sup>m</sup> 2 13	<sup>o</sup> 46	<sup>h</sup> <sup>m</sup> 2 13	<sup>o</sup> 51	
Jan.	0.3 10.3 20.3 30.2	52.711 <sup>113</sup> 52.598 <sup>131</sup> 52.467 <sup>143</sup> 52.324 <sup>149</sup>	50.69 <sup>65</sup> 50.04 <sup>66</sup> 49.38 <sup>66</sup> 48.72 <sup>62</sup>	6.263 <sup>118</sup> 6.145 <sup>133</sup> 6.012 <sup>146</sup> 5.866 <sup>151</sup>	59.05 <sup>91</sup> 59.96 <sup>78</sup> 60.74 <sup>59</sup> 61.33 <sup>39</sup>	43.761 <sup>269</sup> 43.492 <sup>287</sup> 43.205 <sup>297</sup> 42.908 <sup>297</sup>	101.72 <sup>107</sup> 102.79 <sup>53</sup> 103.32 103.31 <sup>55</sup>
Feb.	9.2 19.2	52.175 <sup>147</sup> 52.028 <sup>139</sup>	48.10 <sup>58</sup> 47.52 <sup>50</sup>	5.715 <sup>148</sup> 5.567 <sup>143</sup>	61.72 <sup>20</sup> 61.92 <sup>3</sup>	42.611 <sup>288</sup> 42.323 <sup>268</sup>	102.76 <sup>106</sup> 101.70 <sup>156</sup>
Mar.	1.2 11.1 21.1 31.1	51.889 <sup>118</sup> 51.771 <sup>93</sup> 51.678 <sup>60</sup> 51.618 <sup>21</sup>	47.02 <sup>39</sup> 46.63 <sup>26</sup> 46.37 <sup>11</sup> 46.26 <sup>10</sup>	5.424 <sup>123</sup> 5.301 <sup>97</sup> 5.204 <sup>67</sup> 5.137 <sup>29</sup>	61.89 <sup>23</sup> 61.66 <sup>50</sup> 61.16 <sup>73</sup> 60.43 <sup>96</sup>	42.055 <sup>238</sup> 41.817 <sup>200</sup> 41.617 <sup>153</sup> 41.464 <sup>98</sup>	100.14 <sup>200</sup> 98.14 <sup>239</sup> 95.75 <sup>274</sup> 93.01 <sup>302</sup>
Apr.	10.0 20.0 30.0	51.597 <sup>23</sup> 51.620 <sup>67</sup> 51.687 <sup>114</sup>	46.36 <sup>30</sup> 46.66 <sup>53</sup> 47.19 <sup>75</sup>	5.108 <sup>12</sup> 5.120 <sup>59</sup> 5.179 <sup>100</sup>	59.47 <sup>120</sup> 58.27 <sup>143</sup> 56.84 <sup>160</sup>	41.366 <sup>40</sup> 41.326 <sup>24</sup> 41.350 <sup>88</sup>	89.99 <sup>323</sup> 86.76 <sup>338</sup> 83.38 <sup>346</sup>
May	10.0 19.9 29.9	51.801 <sup>158</sup> 51.959 <sup>197</sup> 52.156 <sup>233</sup>	47.94 <sup>99</sup> 48.93 <sup>120</sup> 50.13 <sup>138</sup>	5.279 <sup>147</sup> 5.426 <sup>188</sup> 5.614 <sup>221</sup>	55.24 <sup>180</sup> 53.44 <sup>195</sup> 51.49 <sup>201</sup>	41.438 <sup>152</sup> 41.590 <sup>213</sup> 41.803 <sup>267</sup>	79.92 <sup>344</sup> 76.48 <sup>337</sup> 73.11 <sup>320</sup>
June	8.9 18.8 28.8	52.389 <sup>261</sup> 52.650 <sup>283</sup> 52.933 <sup>298</sup>	51.51 <sup>153</sup> 53.04 <sup>165</sup> 54.69 <sup>172</sup>	5.835 <sup>249</sup> 6.084 <sup>275</sup> 6.359 <sup>288</sup>	49.48 <sup>207</sup> 47.41 <sup>206</sup> 45.35 <sup>199</sup>	42.070 <sup>316</sup> 42.386 <sup>357</sup> 42.743 <sup>387</sup>	69.91 <sup>296</sup> 66.95 <sup>264</sup> 64.31 <sup>225</sup>
July	8.8 18.8 28.7	53.231 <sup>303</sup> 53.534 <sup>301</sup> 53.835 <sup>295</sup>	56.41 <sup>174</sup> 58.15 <sup>171</sup> 59.86 <sup>163</sup>	6.647 <sup>299</sup> 6.946 <sup>297</sup> 7.243 <sup>291</sup>	43.36 <sup>188</sup> 41.48 <sup>171</sup> 39.77 <sup>147</sup>	43.130 <sup>406</sup> 43.536 <sup>415</sup> 43.951 <sup>413</sup>	62.06 <sup>179</sup> 60.27 <sup>130</sup> 58.97 <sup>75</sup>
Aug.	7.7 17.7 27.7	54.130 <sup>278</sup> 54.408 <sup>260</sup> 54.668 <sup>235</sup>	61.49 <sup>151</sup> 63.00 <sup>135</sup> 64.35 <sup>116</sup>	7.534 <sup>277</sup> 7.811 <sup>262</sup> 8.073 <sup>237</sup>	38.30 <sup>122</sup> 37.08 <sup>91</sup> 36.17 <sup>64</sup>	44.364 <sup>398</sup> 44.762 <sup>374</sup> 45.136 <sup>340</sup>	58.22 <sup>19</sup> 58.03 <sup>39</sup> 58.42 <sup>95</sup>
Sept.	6.6 16.6 26.6	54.903 <sup>208</sup> 55.111 <sup>179</sup> 55.290 <sup>149</sup>	65.51 <sup>95</sup> 66.46 <sup>74</sup> 67.20 <sup>52</sup>	8.310 <sup>208</sup> 8.518 <sup>180</sup> 8.698 <sup>149</sup>	35.53 <sup>28</sup> 35.25 <sup>4</sup> 35.29 <sup>33</sup>	45.476 <sup>298</sup> 45.774 <sup>249</sup> 46.023 <sup>195</sup>	59.37 <sup>148</sup> 60.85 <sup>196</sup> 62.81 <sup>236</sup>
Oct.	6.6 16.5 26.5	55.439 <sup>119</sup> 55.558 <sup>88</sup> 55.646 <sup>59</sup>	67.72 <sup>30</sup> 68.02 <sup>10</sup> 68.12 <sup>8</sup>	8.847 <sup>122</sup> 8.969 <sup>86</sup> 9.055 <sup>55</sup>	35.62 <sup>59</sup> 36.21 <sup>84</sup> 37.05 <sup>100</sup>	46.218 <sup>139</sup> 46.357 <sup>79</sup> 46.436 <sup>21</sup>	65.17 <sup>267</sup> 67.84 <sup>289</sup> 70.73 <sup>298</sup>
Nov.	5.5 15.4 25.4	55.705 <sup>29</sup> 55.734 <sup>1</sup> 55.735 <sup>26</sup>	68.04 <sup>22</sup> 67.82 <sup>35</sup> 67.47 <sup>45</sup>	9.110 <sup>26</sup> 9.136 <sup>3</sup> 9.133 <sup>27</sup>	38.05 <sup>111</sup> 39.16 <sup>120</sup> 40.36 <sup>121</sup>	46.457 <sup>35</sup> 46.422 <sup>89</sup> 46.333 <sup>139</sup>	73.71 <sup>296</sup> 76.67 <sup>284</sup> 79.51 <sup>259</sup>
Dec.	5.4 15.4 25.3 35.3	55.709 <sup>53</sup> 55.656 <sup>79</sup> 55.577 <sup>101</sup> 55.476	67.02 <sup>53</sup> 66.49 <sup>59</sup> 65.90 <sup>62</sup> 65.28	9.106 <sup>57</sup> 9.049 <sup>84</sup> 8.965 <sup>106</sup> 8.859	41.57 <sup>118</sup> 42.75 <sup>110</sup> 43.85 <sup>99</sup> 44.84	46.194 <sup>182</sup> 46.012 <sup>221</sup> 45.791 <sup>252</sup> 45.539	82.10 <sup>225</sup> 84.35 <sup>185</sup> 86.20 <sup>137</sup> 87.57
Mean Place	51.797	52.84	5.488	51.76	43.329	82.52	
Sec $\delta$ , Tan $\delta$	1.011	+0.149	1.007	-0.119	1.620	-1.274	
L $\alpha$ , L $\delta$	0.00	+0.3	0.00	+0.3	-0.02	+0.3	
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+0.5	+0.01	+0.5	+0.07	+0.5	
AUTHORITY			A. E.		A. N.		



# APPARENT PLACES OF STARS, 1922. 291

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\theta$ Arietis. Mag. 5.7		$\kappa$ Fornacis. Mag. 5.4		$\delta$ Hydri. Mag. 4.3	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	h m 2 13	° ' 32	h m 2 18	° ' 24 9	h m 2 20	° ' 69 0
Jan. 0.3	48.068 <sup>s</sup> <sub>119</sub>	28.76 <sup>s</sup> <sub>39</sub>	59.066 <sup>s</sup> <sub>140</sub>	85.61 <sup>s</sup> <sub>113</sub>	21.74 <sup>s</sup> <sub>55</sub>	71.97 <sup>s</sup> <sub>95</sub>
10.3	47.949 <sub>139</sub>	28.37 <sub>52</sub>	58.926 <sub>158</sub>	86.74 <sub>81</sub>	21.19 <sub>57</sub>	72.92 <sub>34</sub>
20.3	47.810 <sub>152</sub>	27.85 <sub>63</sub>	58.768 <sub>169</sub>	87.55 <sub>46</sub>	20.62 <sub>58</sub>	73.26 <sub>25</sub>
30.2	47.658 <sub>159</sub>	27.22 <sub>73</sub>	58.599 <sub>175</sub>	88.01 <sub>10</sub>	20.04 <sub>58</sub>	73.01 <sub>84</sub>
Feb. 9.2	47.499 <sub>158</sub>	26.49 <sub>79</sub>	58.424 <sub>173</sub>	88.11 <sub>25</sub>	19.46 <sub>55</sub>	72.17 <sub>141</sub>
19.2	47.341 <sub>149</sub>	25.70 <sub>84</sub>	58.251 <sub>163</sub>	87.86 <sub>61</sub>	18.91 <sub>52</sub>	70.76 <sub>192</sub>
Mar. 1.2	47.192 <sub>130</sub>	24.86 <sub>82</sub>	58.088 <sub>146</sub>	87.25 <sub>95</sub>	18.39 <sub>47</sub>	68.84 <sub>237</sub>
11.1	47.062 <sub>102</sub>	24.04 <sub>78</sub>	57.942 <sub>120</sub>	86.30 <sub>128</sub>	17.92' <sub>40</sub>	66.47 <sub>277</sub>
21.1	46.960 <sub>67</sub>	23.26 <sub>68</sub>	57.822 <sub>87</sub>	85.02 <sub>159</sub>	17.52 <sub>32</sub>	63.70 <sub>311</sub>
31.1	46.893 <sub>26</sub>	22.58 <sub>54</sub>	57.735 <sub>49</sub>	83.43 <sub>187</sub>	17.20 <sub>23</sub>	60.59 <sub>337</sub>
Apr. 10.0	46.867 <sub>20</sub>	22.04 <sub>36</sub>	57.686 <sub>5</sub>	81.56 <sub>212</sub>	16.97 <sub>14</sub>	57.22 <sub>356</sub>
20.0	46.887 <sub>68</sub>	21.68 <sub>15</sub>	57.681 <sub>42</sub>	79.44 <sub>233</sub>	16.83 <sub>4</sub>	53.66 <sub>366</sub>
30.0	46.955 <sub>116</sub>	21.53 <sub>9</sub>	57.723 <sub>90</sub>	77.11 <sub>249</sub>	16.79 <sub>7</sub>	50.00 <sub>369</sub>
May 10.0	47.071 <sub>163</sub>	21.62 <sub>35</sub>	57.813 <sub>136</sub>	74.62 <sub>261</sub>	16.86 <sub>18</sub>	46.31 <sub>363</sub>
19.9	47.234 <sub>205</sub>	21.97 <sub>60</sub>	57.949 <sub>180</sub>	72.01 <sub>266</sub>	17.04 <sub>27</sub>	42.68 <sub>349</sub>
29.9	47.439 <sub>242</sub>	22.57 <sub>84</sub>	58.129 <sub>219</sub>	69.35 <sub>255</sub>	17.31 <sub>36</sub>	39.19 <sub>328</sub>
June 8.9	47.681 <sub>271</sub>	23.41 <sub>107</sub>	58.348 <sub>253</sub>	66.70 <sub>259</sub>	17.67 <sub>46</sub>	35.91 <sub>296</sub>
18.8	47.952 <sub>295</sub>	24.48 <sub>127</sub>	58.601 <sub>280</sub>	64.11 <sub>244</sub>	18.13 <sub>51</sub>	32.95 <sub>260</sub>
28.8	48.247 <sub>310</sub>	25.75 <sub>143</sub>	58.881 <sub>298</sub>	61.67 <sub>224</sub>	18.64 <sub>58</sub>	30.35 <sub>214</sub>
July 8.8	48.557 <sub>316</sub>	27.18 <sub>156</sub>	59.179 <sub>310</sub>	59.43 <sub>197</sub>	19.22 <sub>62</sub>	28.21 <sub>163</sub>
18.8	48.873 <sub>315</sub>	28.74 <sub>163</sub>	59.489 <sub>313</sub>	57.46 <sub>165</sub>	19.84 <sub>65</sub>	26.58 <sub>108</sub>
28.7	49.188 <sub>307</sub>	30.37 <sub>166</sub>	59.802 <sub>308</sub>	55.81 <sub>128</sub>	20.49 <sub>65</sub>	25.50 <sub>50</sub>
Aug. 7.7	49.495 <sub>292</sub>	32.03 <sub>166</sub>	60.110 <sub>296</sub>	54.53 <sub>87</sub>	21.14 <sub>64</sub>	25.00 <sub>12</sub>
17.7	49.787 <sub>272</sub>	33.69 <sub>160</sub>	60.406 <sub>278</sub>	53.66 <sub>43</sub>	21.78 <sub>60</sub>	25.12 <sub>72</sub>
27.7	50.059 <sub>249</sub>	35.29 <sub>152</sub>	60.684 <sub>253</sub>	53.23 <sub>0</sub>	22.38 <sub>57</sub>	25.84 <sub>131</sub>
Sept. 6.6	50.308 <sub>221</sub>	36.81 <sub>139</sub>	60.937 <sub>225</sub>	53.23 <sub>45</sub>	22.95 <sub>47</sub>	27.15 <sub>185</sub>
16.6	50.529 <sub>192</sub>	38.20 <sub>126</sub>	61.162 <sub>193</sub>	53.68 <sub>85</sub>	23.42 <sub>41</sub>	29.00 <sub>234</sub>
26.6	50.721 <sub>162</sub>	39.46 <sub>110</sub>	61.355 <sub>159</sub>	54.53 <sub>122</sub>	23.83 <sub>31</sub>	31.34 <sub>273</sub>
Oct. 6.6	50.883 <sub>131</sub>	40.56 <sub>93</sub>	61.514 <sub>124</sub>	55.75 <sub>154</sub>	24.14 <sub>21</sub>	34.07 <sub>303</sub>
16.5	51.014 <sub>99</sub>	41.49 <sub>77</sub>	61.638 <sub>88</sub>	57.29 <sub>178</sub>	24.35 <sub>10</sub>	37.10 <sub>322</sub>
26.5	51.113 <sub>69</sub>	42.26 <sub>60</sub>	61.726 <sub>53</sub>	59.07 <sub>195</sub>	24.45 <sub>1</sub>	40.32 <sub>328</sub>
Nov. 5.5	51.182 <sub>38</sub>	42.86 <sub>45</sub>	61.779 <sub>19</sub>	61.02 <sub>203</sub>	24.44 <sub>11</sub>	43.60 <sub>322</sub>
15.4	51.220 <sub>7</sub>	43.31 <sub>28</sub>	61.798 <sub>14</sub>	63.05 <sub>203</sub>	24.33 <sub>22</sub>	46.82 <sub>303</sub>
25.4	51.227 <sub>22</sub>	43.59 <sub>14</sub>	61.784 <sub>46</sub>	65.08 <sub>195</sub>	24.11 <sub>31</sub>	49.85 <sub>271</sub>
Dec. 5.4	51.205 <sub>51</sub>	43.73 <sub>1</sub>	61.738 <sub>76</sub>	67.03 <sub>179</sub>	23.80 <sub>39</sub>	52.56 <sub>233</sub>
15.4	51.154 <sub>80</sub>	43.72 <sub>16</sub>	61.662 <sub>102</sub>	68.82 <sub>158</sub>	23.41 <sub>46</sub>	54.89 <sub>184</sub>
25.3	51.074 <sub>105</sub>	43.56 <sub>29</sub>	61.560 <sub>127</sub>	70.40 <sub>131</sub>	22.95 <sub>51</sub>	56.73 <sub>129</sub>
35.3	50.969	43.27	61.433	71.71	22.44	58.02
Mean Place	46.975	27.60	58.402	72.88	21.32	50.36
Sec $\delta$ , Tan $\delta$	1.061	+0.355	1.096	-0.449	2.792	-2.607
L $\alpha$ , L $\delta$	+0.01	+0.3	-0.01	+0.3	-0.04	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.02	+0.5	+0.02	+0.6	+0.14	+0.6

AUTHORITY

A. N.

A. N.

## 292 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\xi^2$ Ceti. Mag. 4.3		$\nu$ Ceti. Mag. 5.0		$\delta$ Ceti. Mag. 4.0	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 2 24	<sup>°</sup> <sup>'</sup> 8 6	<sup>h</sup> <sup>m</sup> 2 31	<sup>°</sup> <sup>'</sup> 5 15	<sup>h</sup> <sup>m</sup> 2 35	<sup>°</sup> <sup>'</sup> 0 0
Jan. 0.3	1.542 <sup>109</sup>	37.32 <sup>65</sup>	47.691 <sup>106</sup>	9.16 <sup>71</sup>	29.935 <sup>107</sup>	31.63 <sup>82</sup>
10.3	1.433 <sup>130</sup>	36.67 <sup>65</sup>	47.585 <sup>126</sup>	8.45 <sup>68</sup>	29.828 <sup>127</sup>	32.45 <sup>77</sup>
20.3	1.303 <sup>143</sup>	36.02 <sup>63</sup>	47.459 <sup>143</sup>	7.77 <sup>64</sup>	29.701 <sup>142</sup>	33.22 <sup>64</sup>
30.3	1.160 <sup>152</sup>	35.39 <sup>59</sup>	47.316 <sup>152</sup>	7.13 <sup>56</sup>	29.559 <sup>154</sup>	33.86 <sup>52</sup>
Feb. 9.2	1.008 <sup>153</sup>	34.80 <sup>55</sup>	47.164 <sup>155</sup>	6.57 <sup>47</sup>	29.405 <sup>155</sup>	34.38 <sup>38</sup>
19.2	0.855 <sup>144</sup>	34.25 <sup>46</sup>	47.009 <sup>149</sup>	6.10 <sup>38</sup>	29.250 <sup>149</sup>	34.76 <sup>23</sup>
Mar. 1.2	0.711 <sup>131</sup>	33.79 <sup>37</sup>	46.860 <sup>133</sup>	5.72 <sup>25</sup>	29.101 <sup>138</sup>	34.99 <sup>4</sup>
11.1	0.580 <sup>103</sup>	33.42 <sup>24</sup>	46.727 <sup>112</sup>	5.47 <sup>10</sup>	28.963 <sup>113</sup>	35.03 <sup>11</sup>
21.1	0.477 <sup>74</sup>	33.18 <sup>5</sup>	46.615 <sup>80</sup>	5.37 <sup>7</sup>	28.850 <sup>82</sup>	34.92 <sup>36</sup>
31.1	0.403 <sup>34</sup>	33.13 <sup>10</sup>	46.535 <sup>43</sup>	5.44 <sup>26</sup>	28.768 <sup>47</sup>	34.56 <sup>57</sup>
Apr. 10.1	0.369 <sup>7</sup>	33.23 <sup>30</sup>	46.492 <sup>0</sup>	5.70 <sup>47</sup>	28.721 <sup>7</sup>	33.99 <sup>75</sup>
20.0	0.376 <sup>55</sup>	33.53 <sup>54</sup>	46.492 <sup>44</sup>	6.17 <sup>68</sup>	28.714 <sup>38</sup>	33.24 <sup>101</sup>
30.0	0.431 <sup>98</sup>	34.07 <sup>74</sup>	46.536 <sup>89</sup>	6.85 <sup>91</sup>	28.752 <sup>83</sup>	32.23 <sup>121</sup>
May 10.0	0.529 <sup>144</sup>	34.81 <sup>98</sup>	46.625 <sup>135</sup>	7.76 <sup>111</sup>	28.835 <sup>128</sup>	31.02 <sup>139</sup>
20.0	0.673 <sup>186</sup>	35.79 <sup>116</sup>	46.760 <sup>176</sup>	8.87 <sup>130</sup>	28.963 <sup>170</sup>	29.63 <sup>156</sup>
29.9	0.859 <sup>220</sup>	36.95 <sup>136</sup>	46.936 <sup>214</sup>	10.17 <sup>147</sup>	29.133 <sup>208</sup>	28.07 <sup>172</sup>
June 8.9	1.079 <sup>252</sup>	38.31 <sup>151</sup>	47.150 <sup>245</sup>	11.64 <sup>159</sup>	29.341 <sup>238</sup>	26.35 <sup>178</sup>
18.9	1.331 <sup>276</sup>	39.82 <sup>158</sup>	47.395 <sup>269</sup>	13.23 <sup>169</sup>	29.579 <sup>264</sup>	24.57 <sup>184</sup>
28.8	1.607 <sup>293</sup>	41.40 <sup>167</sup>	47.664 <sup>288</sup>	14.92 <sup>173</sup>	29.843 <sup>283</sup>	22.73 <sup>186</sup>
July 8.8	1.900 <sup>300</sup>	43.07 <sup>169</sup>	47.952 <sup>296</sup>	16.65 <sup>172</sup>	30.126 <sup>293</sup>	20.87 <sup>179</sup>
18.8	2.200 <sup>302</sup>	44.76 <sup>168</sup>	48.248 <sup>300</sup>	18.37 <sup>166</sup>	30.419 <sup>296</sup>	19.08 <sup>171</sup>
28.8	2.502 <sup>294</sup>	46.44 <sup>160</sup>	48.548 <sup>294</sup>	20.03 <sup>156</sup>	30.715 <sup>293</sup>	17.37 <sup>154</sup>
Aug. 7.7	2.796 <sup>284</sup>	48.04 <sup>146</sup>	48.842 <sup>284</sup>	21.59 <sup>142</sup>	31.008 <sup>284</sup>	15.83 <sup>133</sup>
17.7	3.080 <sup>267</sup>	49.50 <sup>129</sup>	49.126 <sup>268</sup>	23.01 <sup>122</sup>	31.292 <sup>267</sup>	14.50 <sup>112</sup>
27.7	3.347 <sup>245</sup>	50.79 <sup>113</sup>	49.394 <sup>247</sup>	24.23 <sup>101</sup>	31.559 <sup>248</sup>	13.38 <sup>85</sup>
Sept. 6.7	3.592 <sup>219</sup>	51.92 <sup>91</sup>	49.641 <sup>223</sup>	25.24 <sup>79</sup>	31.807 <sup>225</sup>	12.53 <sup>56</sup>
16.6	3.811 <sup>191</sup>	52.83 <sup>70</sup>	49.864 <sup>197</sup>	26.03 <sup>53</sup>	32.032 <sup>196</sup>	11.97 <sup>29</sup>
26.6	4.002 <sup>165</sup>	53.53 <sup>45</sup>	50.061 <sup>168</sup>	26.56 <sup>30</sup>	32.228 <sup>172</sup>	11.68 <sup>1</sup>
Oct. 6.6	4.167 <sup>132</sup>	53.98 <sup>26</sup>	50.229 <sup>139</sup>	26.86 <sup>7</sup>	32.400 <sup>141</sup>	11.67 <sup>23</sup>
16.5	4.299 <sup>106</sup>	54.24 <sup>5</sup>	50.368 <sup>110</sup>	26.93 <sup>14</sup>	32.541 <sup>112</sup>	11.90 <sup>43</sup>
26.5	4.405 <sup>75</sup>	54.29 <sup>12</sup>	50.478 <sup>81</sup>	26.79 <sup>31</sup>	32.653 <sup>83</sup>	12.33 <sup>64</sup>
Nov. 5.5	4.480 <sup>42</sup>	54.17 <sup>27</sup>	50.559 <sup>50</sup>	26.48 <sup>46</sup>	32.736 <sup>50</sup>	12.97 <sup>78</sup>
15.5	4.522 <sup>18</sup>	53.90 <sup>36</sup>	50.609 <sup>22</sup>	26.02 <sup>57</sup>	32.786 <sup>22</sup>	13.75 <sup>89</sup>
25.4	4.540 <sup>15</sup>	53.54 <sup>48</sup>	50.631 <sup>9</sup>	25.45 <sup>64</sup>	32.808 <sup>9</sup>	14.64 <sup>92</sup>
Dec. 5.4	4.525 <sup>43</sup>	53.06 <sup>56</sup>	50.622 <sup>36</sup>	24.81 <sup>70</sup>	32.799 <sup>34</sup>	15.56 <sup>96</sup>
15.4	4.482 <sup>70</sup>	52.50 <sup>61</sup>	50.586 <sup>65</sup>	24.11 <sup>71</sup>	32.765 <sup>64</sup>	16.52 <sup>93</sup>
25.3	4.412 <sup>96</sup>	51.89 <sup>64</sup>	50.521 <sup>91</sup>	23.40 <sup>71</sup>	32.701 <sup>92</sup>	17.45 <sup>86</sup>
35.3	4.316	51.25	50.430	22.69	32.609	18.31
Mean Place	0.552	40.27	46.695	13.34	28.975	25.66
Sec $\delta$ , Tan $\delta$	1.010	+0.143	1.004	+0.092	1.000	0.000
L $\alpha$ , L $\delta$	0.00	+0.3	0.00	+0.3	0.00	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+0.6	-0.01	+0.6	0.00	+0.6
AUTHORITY	A. E.				A. E.	

# APPARENT PLACES OF STARS, 1922. 293

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\gamma$ Ceti. Mag. 3.6		$\pi$ Ceti. Mag. 4.4		$\beta$ Fornacis. Mag. 4.5	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 2 39	<sup>°</sup> <sup>'</sup> 2 54	<sup>h</sup> <sup>m</sup> 2 40	<sup>°</sup> <sup>'</sup> 14 11	<sup>h</sup> <sup>m</sup> 2 45	<sup>°</sup> <sup>'</sup> 32 43
Jan.	0.3 16.409 <sup>103</sup>	22.95 78	25.401 <sup>115</sup>	28.25 115	50.369 <sup>156</sup>	74.08 140
	10.3 16.306 <sup>125</sup>	22.17 71	25.286 <sup>137</sup>	29.40 90	50.213 <sup>177</sup>	75.48 101
	20.3 16.181 <sup>143</sup>	21.46 64	25.149 <sup>154</sup>	30.30 65	50.036 <sup>196</sup>	76.49 58
	30.3 16.038 <sup>153</sup>	20.82 55	24.995 <sup>164</sup>	30.95 37	49.840 <sup>205</sup>	77.07 17
Feb.	9.2 15.885 <sup>157</sup>	20.27 43	24.831 <sup>167</sup>	31.32 11	49.635 <sup>208</sup>	77.24 28
	19.2 15.728 <sup>152</sup>	19.84 31	24.664 <sup>162</sup>	31.43 18	49.427 <sup>202</sup>	76.96 70
Mar.	1.2 15.576 <sup>139</sup>	19.53 17	24.502 <sup>149</sup>	31.25 48	49.225 <sup>185</sup>	76.26 110
	11.1 15.437 <sup>116</sup>	19.36 0	24.353 <sup>126</sup>	30.77 76	49.040 <sup>163</sup>	75.16 148
	21.1 15.321 <sup>87</sup>	19.36 19	24.227 <sup>95</sup>	30.01 102	48.877 <sup>129</sup>	73.68 184
	31.1 15.234 <sup>51</sup>	19.55 38	24.132 <sup>60</sup>	28.99 131	48.748 <sup>90</sup>	71.84 216
Apr.	10.1 15.183 <sup>9</sup>	19.93 59	24.072 <sup>19</sup>	27.68 155	48.658 <sup>44</sup>	69.68 244
	20.0 15.174 <sup>36</sup>	20.52 81	24.053 <sup>25</sup>	26.13 177	48.614 <sup>2</sup>	67.24 263
	30.0 15.210 <sup>81</sup>	21.33 102	24.078 <sup>72</sup>	24.36 200	48.616 <sup>56</sup>	64.61 283
May	10.0 15.291 <sup>126</sup>	22.35 122	24.150 <sup>117</sup>	22.36 212	48.672 <sup>106</sup>	61.78 294
	20.0 15.417 <sup>169</sup>	23.57 141	24.267 <sup>159</sup>	20.24 225	48.778 <sup>152</sup>	58.84 298
	29.9 15.586 <sup>205</sup>	24.98 155	24.426 <sup>199</sup>	17.99 232	48.930 <sup>200</sup>	55.86 296
June	8.9 15.791 <sup>239</sup>	26.53 167	24.625 <sup>234</sup>	15.67 231	49.130 <sup>239</sup>	52.90 285
	18.9 16.030 <sup>264</sup>	28.20 174	24.859 <sup>260</sup>	13.36 227	49.369 <sup>271</sup>	50.05 270
	28.8 16.294 <sup>282</sup>	29.94 177	25.119 <sup>280</sup>	11.09 216	49.640 <sup>296</sup>	47.35 243
July	8.8 16.576 <sup>293</sup>	31.71 174	25.399 <sup>293</sup>	8.93 197	49.936 <sup>315</sup>	44.92 213
	18.8 16.869 <sup>297</sup>	33.45 167	25.692 <sup>299</sup>	6.96 176	50.251 <sup>324</sup>	42.79 177
	28.8 17.166 <sup>294</sup>	35.12 153	25.991 <sup>297</sup>	5.20 147	50.575 <sup>326</sup>	41.02 135
Aug.	7.7 17.460 <sup>285</sup>	36.65 137	26.288 <sup>288</sup>	3.73 115	50.901 <sup>320</sup>	39.67 87
	17.7 17.745 <sup>269</sup>	38.02 117	26.576 <sup>274</sup>	2.58 79	51.221 <sup>306</sup>	38.80 37
	27.7 18.014 <sup>250</sup>	39.19 92	26.850 <sup>255</sup>	1.79 40	51.527 <sup>283</sup>	38.43 13
Sept.	6.7 18.264 <sup>226</sup>	40.11 68	27.105 <sup>230</sup>	1.39 2	51.810 <sup>259</sup>	38.56 63
	16.6 18.490 <sup>201</sup>	40.79 41	27.335 <sup>203</sup>	1.37 35	52.069 <sup>228</sup>	39.19 110
	26.6 18.691 <sup>174</sup>	41.20 16	27.538 <sup>173</sup>	1.72 71	52.297 <sup>192</sup>	40.29 151
Oct.	6.6 18.865 <sup>145</sup>	41.36 8	27.711 <sup>143</sup>	2.43 102	52.489 <sup>157</sup>	41.80 190
	16.5 19.010 <sup>116</sup>	41.28 30	27.854 <sup>113</sup>	3.45 127	52.646 <sup>118</sup>	43.70 218
	26.5 19.126 <sup>86</sup>	40.98 47	27.967 <sup>80</sup>	4.72 147	52.764 <sup>77</sup>	45.88 237
Nov.	5.5 19.212 <sup>57</sup>	40.51 62	28.047 <sup>47</sup>	6.19 159	52.841 <sup>39</sup>	48.25 248
	15.5 19.269 <sup>27</sup>	39.89 72	28.094 <sup>16</sup>	7.78 164	52.880 <sup>1</sup>	50.73 247
	25.4 19.296 <sup>2</sup>	39.17 79	28.110 <sup>14</sup>	9.42 164	52.881 <sup>38</sup>	53.20 238
Dec.	5.4 19.294 <sup>33</sup>	38.38 82	28.096 <sup>46</sup>	11.06 157	52.843 <sup>74</sup>	55.58 221
	15.4 19.261 <sup>61</sup>	37.56 81	28.050 <sup>73</sup>	12.63 143	52.769 <sup>107</sup>	57.79 193
	25.4 19.200 <sup>88</sup>	36.75 79	27.977 <sup>100</sup>	14.06 126	52.662 <sup>138</sup>	59.72 162
	35.3 19.112	35.96	27.877	15.32	52.524	61.34
Mean Place	15.400	28.16	24.538	17.87	49.577	58.63
Sec $\delta$ , Tan $\delta$	1.001	+0.051	1.031	-0.253	1.189	-0.643
L $\alpha$ , L $\delta$	0.00	+0.3	0.00	+0.3	-0.01	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+0.6	+0.01	+0.6	+0.03	+0.7
AUTHORITY	A. N.		A. E.		A. E.	

# 294 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\sigma$ Arietis. Mag. 5.5		$\epsilon$ Arietis (mean). Mag. 4.6		$\theta$ Eridani. Mag. 3.1	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	h m 2 47	° ' 14 45	h m 2 54	° ' 21 1	h m 2 55	° ' 40 36
Jan.	0.3 12.161 <sup>100</sup>	38.93 <sup>45</sup>	46.187 <sup>102</sup>	44.59 <sup>22</sup>	19.190 <sup>183</sup>	77.12 <sup>157</sup>
	10.3 12.061 <sup>127</sup>	38.48 <sup>50</sup>	46.085 <sup>129</sup>	44.37 <sup>34</sup>	19.007 <sup>209</sup>	78.69 <sup>110</sup>
	20.3 11.934 <sup>145</sup>	37.98 <sup>55</sup>	45.956 <sup>151</sup>	44.03 <sup>45</sup>	18.798 <sup>229</sup>	79.79 <sup>63</sup>
	30.3 11.789 <sup>158</sup>	37.43 <sup>58</sup>	45.805 <sup>166</sup>	43.58 <sup>55</sup>	18.569 <sup>241</sup>	80.42 <sup>14</sup>
Feb.	9.2 11.631 <sup>165</sup>	36.85 <sup>60</sup>	45.639 <sup>173</sup>	43.03 <sup>64</sup>	18.328 <sup>244</sup>	80.56 <sup>35</sup>
	19.2 11.466 <sup>160</sup>	36.25 <sup>59</sup>	45.466 <sup>170</sup>	42.39 <sup>70</sup>	18.084 <sup>237</sup>	80.21 <sup>82</sup>
Mar.	1.2 11.306 <sup>147</sup>	35.66 <sup>56</sup>	45.296 <sup>157</sup>	41.69 <sup>72</sup>	17.847 <sup>220</sup>	79.39 <sup>127</sup>
	11.1 11.159 <sup>126</sup>	35.10 <sup>50</sup>	45.139 <sup>136</sup>	40.97 <sup>72</sup>	17.627 <sup>196</sup>	78.12 <sup>167</sup>
	21.1 11.033 <sup>94</sup>	34.60 <sup>39</sup>	45.003 <sup>104</sup>	40.25 <sup>68</sup>	17.431 <sup>161</sup>	76.45 <sup>207</sup>
	31.1 10.939 <sup>57</sup>	34.21 <sup>26</sup>	44.899 <sup>65</sup>	39.57 <sup>58</sup>	17.270 <sup>122</sup>	74.38 <sup>241</sup>
Apr.	10.1 10.882 <sup>13</sup>	33.95 <sup>10</sup>	44.834 <sup>21</sup>	38.99 <sup>45</sup>	17.148 <sup>71</sup>	71.97 <sup>269</sup>
	20.0 10.869 <sup>33</sup>	33.85 <sup>9</sup>	44.813 <sup>27</sup>	38.54 <sup>29</sup>	17.077 <sup>20</sup>	69.28 <sup>291</sup>
	30.0 10.902 <sup>81</sup>	33.94 <sup>31</sup>	44.840 <sup>76</sup>	38.25 <sup>9</sup>	17.057 <sup>37</sup>	66.37 <sup>308</sup>
May	10.0 10.983 <sup>127</sup>	34.25 <sup>51</sup>	44.916 <sup>126</sup>	38.16 <sup>13</sup>	17.094 <sup>89</sup>	63.29 <sup>319</sup>
	20.0 11.110 <sup>171</sup>	34.76 <sup>74</sup>	45.042 <sup>171</sup>	38.29 <sup>36</sup>	17.183 <sup>143</sup>	60.10 <sup>322</sup>
	29.9 11.281 <sup>210</sup>	35.50 <sup>94</sup>	45.213 <sup>212</sup>	38.65 <sup>58</sup>	17.326 <sup>195</sup>	56.88 <sup>316</sup>
June	8.9 11.491 <sup>245</sup>	36.44 <sup>112</sup>	45.425 <sup>247</sup>	39.23 <sup>79</sup>	17.521 <sup>238</sup>	53.72 <sup>306</sup>
	18.9 11.736 <sup>270</sup>	37.56 <sup>129</sup>	45.672 <sup>276</sup>	40.02 <sup>98</sup>	17.759 <sup>279</sup>	50.66 <sup>282</sup>
	28.8 12.006 <sup>291</sup>	38.85 <sup>139</sup>	45.948 <sup>297</sup>	41.00 <sup>116</sup>	18.038 <sup>307</sup>	47.84 <sup>256</sup>
July	8.8 12.297 <sup>303</sup>	40.24 <sup>148</sup>	46.245 <sup>310</sup>	42.16 <sup>128</sup>	18.345 <sup>331</sup>	45.28 <sup>220</sup>
	18.8 12.600 <sup>307</sup>	41.72 <sup>152</sup>	46.555 <sup>316</sup>	43.44 <sup>138</sup>	18.676 <sup>346</sup>	43.08 <sup>179</sup>
	28.8 12.907 <sup>304</sup>	43.24 <sup>151</sup>	46.871 <sup>315</sup>	44.82 <sup>143</sup>	19.022 <sup>348</sup>	41.29 <sup>134</sup>
Aug.	7.7 13.211 <sup>296</sup>	44.75 <sup>145</sup>	47.186 <sup>306</sup>	46.25 <sup>144</sup>	19.370 <sup>345</sup>	39.95 <sup>79</sup>
	17.7 13.507 <sup>281</sup>	46.20 <sup>136</sup>	47.492 <sup>294</sup>	47.69 <sup>142</sup>	19.715 <sup>333</sup>	39.16 <sup>27</sup>
	27.7 13.788 <sup>263</sup>	47.56 <sup>124</sup>	47.786 <sup>275</sup>	49.11 <sup>135</sup>	20.048 <sup>313</sup>	38.89 <sup>27</sup>
Sept.	6.7 14.051 <sup>240</sup>	48.80 <sup>109</sup>	48.061 <sup>254</sup>	50.46 <sup>126</sup>	20.361 <sup>285</sup>	39.16 <sup>84</sup>
	16.6 14.291 <sup>216</sup>	49.89 <sup>92</sup>	48.315 <sup>229</sup>	51.72 <sup>115</sup>	20.646 <sup>255</sup>	40.00 <sup>133</sup>
	26.6 14.507 <sup>189</sup>	50.81 <sup>75</sup>	48.544 <sup>202</sup>	52.87 <sup>102</sup>	20.901 <sup>216</sup>	41.33 <sup>179</sup>
Oct.	6.6 14.696 <sup>160</sup>	51.56 <sup>57</sup>	48.746 <sup>174</sup>	53.89 <sup>89</sup>	21.117 <sup>174</sup>	43.12 <sup>218</sup>
	16.5 14.856 <sup>132</sup>	52.13 <sup>39</sup>	48.920 <sup>145</sup>	54.78 <sup>74</sup>	21.291 <sup>132</sup>	45.30 <sup>248</sup>
	26.5 14.988 <sup>102</sup>	52.52 <sup>24</sup>	49.065 <sup>114</sup>	55.52 <sup>61</sup>	21.423 <sup>88</sup>	47.78 <sup>269</sup>
Nov.	5.5 15.090 <sup>71</sup>	52.76 <sup>10</sup>	49.179 <sup>83</sup>	56.13 <sup>47</sup>	21.511 <sup>41</sup>	50.47 <sup>279</sup>
	15.5 15.161 <sup>40</sup>	52.86 <sup>3</sup>	49.262 <sup>51</sup>	56.60 <sup>35</sup>	21.552 <sup>3</sup>	53.26 <sup>278</sup>
	25.4 15.201 <sup>9</sup>	52.83 <sup>13</sup>	49.313 <sup>17</sup>	56.95 <sup>23</sup>	21.549 <sup>48</sup>	56.04 <sup>267</sup>
Dec.	5.4 15.210 <sup>22</sup>	52.70 <sup>23</sup>	49.330 <sup>17</sup>	57.18 <sup>11</sup>	21.501 <sup>89</sup>	58.71 <sup>247</sup>
	15.4 15.188 <sup>55</sup>	52.47 <sup>31</sup>	49.313 <sup>51</sup>	57.29 <sup>1</sup>	21.412 <sup>127</sup>	61.18 <sup>215</sup>
	25.4 15.133 <sup>85</sup>	52.16 <sup>38</sup>	49.262 <sup>83</sup>	57.28 <sup>13</sup>	21.285 <sup>162</sup>	63.33 <sup>180</sup>
	35.3 15.048	51.78	49.179	57.15	21.123	65.13
Mean Place	10.971	40.90	44.866	45.14	18.348	59.88
Sec $\delta$ , Tan $\delta$	1.034	+0.263	1.071	+0.384	1.317	-0.858
L $\alpha$ , L $\delta$	0.00	+0.3	+0.01	+0.3	-0.02	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+0.7	-0.02	+0.7	+0.04	+0.7

AUTHORITY

A. E.

APPARENT PLACES OF STARS, 1922. 295

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Ceti. Mag. 2.8		$\gamma$ Persei. Mag. 3.1		$\mu$ Horologii. Mag. 5.2	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 2 58	<sup>°</sup> <sup>'</sup> 3 46	<sup>h</sup> <sup>m</sup> 2 59	<sup>°</sup> <sup>'</sup> 53 11	<sup>h</sup> <sup>m</sup> 3 I	<sup>°</sup> <sup>'</sup> 60 2
Jan.	0.3 13.102 <sub>97</sub>	58.69 <sub>77</sub>	10.523 <sub>191</sub>	74.89 <sub>97</sub>	47.20 <sub>34</sub>	43.24 <sub>162</sub>
	10.3 13.005 <sub>120</sub>	57.92 <sub>72</sub>	10.332 <sub>236</sub>	75.86 <sub>57</sub>	46.86 <sub>37</sub>	44.86 <sub>106</sub>
	20.3 12.885 <sub>142</sub>	57.20 <sub>63</sub>	10.096 <sub>268</sub>	76.43 <sub>16</sub>	46.49 <sub>40</sub>	45.92 <sub>50</sub>
	30.3 12.743 <sub>155</sub>	56.57 <sub>56</sub>	9.828 <sub>291</sub>	76.59 <sub>27</sub>	46.09 <sub>42</sub>	46.42 <sub>8</sub>
Feb.	9.2 12.588 <sub>160</sub>	56.01 <sub>44</sub>	9.537 <sub>297</sub>	76.32 <sub>69</sub>	45.67 <sub>41</sub>	46.34 <sub>66</sub>
	19.2 12.428 <sub>160</sub>	55.57 <sub>33</sub>	9.240 <sub>292</sub>	75.63 <sub>108</sub>	45.26 <sub>40</sub>	45.68 <sub>118</sub>
Mar.	1.2 12.268 <sub>148</sub>	55.24 <sub>20</sub>	8.948 <sub>269</sub>	74.55 <sub>141</sub>	44.86 <sub>38</sub>	44.50 <sub>168</sub>
	11.1 12.120 <sub>132</sub>	55.04 <sub>3</sub>	8.679 <sub>231</sub>	73.14 <sub>168</sub>	44.48 <sub>34</sub>	42.82 <sub>216</sub>
	21.1 11.988 <sub>100</sub>	55.01 <sub>12</sub>	8.448 <sub>180</sub>	71.46 <sub>190</sub>	44.14 <sub>28</sub>	40.66 <sub>256</sub>
	31.1 11.888 <sub>66</sub>	55.13 <sub>32</sub>	8.268 <sub>121</sub>	69.56 <sub>202</sub>	43.86 <sub>23</sub>	38.10 <sub>289</sub>
Apr.	10.1 11.822 <sub>25</sub>	55.45 <sub>54</sub>	8.147 <sub>53</sub>	67.54 <sub>205</sub>	43.63 <sub>17</sub>	35.21 <sub>320</sub>
	20.0 11.797 <sub>16</sub>	55.99 <sub>72</sub>	8.094 <sub>21</sub>	65.49 <sub>200</sub>	43.46 <sub>8</sub>	32.01 <sub>341</sub>
	30.0 11.813 <sub>65</sub>	56.71 <sub>95</sub>	8.115 <sub>95</sub>	63.49 <sub>188</sub>	43.38 <sub>1</sub>	28.60 <sub>352</sub>
May	10.0 11.878 <sub>108</sub>	57.66 <sub>114</sub>	8.210 <sub>168</sub>	61.61 <sub>168</sub>	43.37 <sub>6</sub>	25.08 <sub>359</sub>
	20.0 11.986 <sub>153</sub>	58.80 <sub>130</sub>	8.378 <sub>236</sub>	59.93 <sub>143</sub>	43.43 <sub>15</sub>	21.49 <sub>356</sub>
	29.9 12.139 <sub>194</sub>	60.10 <sub>147</sub>	8.614 <sub>296</sub>	58.50 <sub>111</sub>	43.58 <sub>22</sub>	17.93 <sub>344</sub>
June	8.9 12.333 <sub>223</sub>	61.57 <sub>160</sub>	8.910 <sub>351</sub>	57.39 <sub>78</sub>	43.80 <sub>29</sub>	14.49 <sub>325</sub>
	18.9 12.556 <sub>253</sub>	63.17 <sub>162</sub>	9.261 <sub>393</sub>	56.61 <sub>43</sub>	44.09 <sub>35</sub>	11.24 <sub>298</sub>
	28.8 12.809 <sub>274</sub>	64.79 <sub>171</sub>	9.654 <sub>425</sub>	56.18 <sub>4</sub>	44.44 <sub>39</sub>	8.26 <sub>262</sub>
July	8.8 13.083 <sub>291</sub>	66.50 <sub>169</sub>	10.079 <sub>447</sub>	56.14 <sub>31</sub>	44.83 <sub>44</sub>	5.64 <sub>217</sub>
	18.8 13.374 <sub>295</sub>	68.19 <sub>163</sub>	10.526 <sub>457</sub>	56.45 <sub>66</sub>	45.27 <sub>47</sub>	3.47 <sub>168</sub>
	28.8 13.669 <sub>294</sub>	69.82 <sub>151</sub>	10.983 <sub>459</sub>	57.11 <sub>102</sub>	45.74 <sub>48</sub>	1.79 <sub>115</sub>
Aug.	7.7 13.963 <sub>288</sub>	71.33 <sub>134</sub>	11.442 <sub>452</sub>	58.13 <sub>130</sub>	46.22 <sub>49</sub>	0.64 <sub>54</sub>
	17.7 14.251 <sub>276</sub>	72.67 <sub>115</sub>	11.894 <sub>433</sub>	59.43 <sub>158</sub>	46.71 <sub>47</sub>	0.10 <sub>5</sub>
	27.7 14.527 <sub>259</sub>	73.82 <sub>93</sub>	12.327 <sub>411</sub>	61.01 <sub>182</sub>	47.18 <sub>44</sub>	0.15 <sub>69</sub>
Sept.	6.7 14.786 <sub>241</sub>	74.75 <sub>67</sub>	12.738 <sub>380</sub>	62.83 <sub>203</sub>	47.62 <sub>42</sub>	0.84 <sub>126</sub>
	16.6 15.027 <sub>216</sub>	75.42 <sub>42</sub>	13.118 <sub>346</sub>	64.86 <sub>216</sub>	48.04 <sub>36</sub>	2.10 <sub>181</sub>
	26.6 15.243 <sub>189</sub>	75.84 <sub>19</sub>	13.464 <sub>309</sub>	67.02 <sub>229</sub>	48.40 <sub>30</sub>	3.91 <sub>232</sub>
Oct.	6.6 15.432 <sub>165</sub>	76.03 <sub>6</sub>	13.773 <sub>265</sub>	69.31 <sub>238</sub>	48.70 <sub>24</sub>	6.23 <sub>270</sub>
	16.5 15.597 <sub>135</sub>	75.97 <sub>27</sub>	14.038 <sub>218</sub>	71.69 <sub>240</sub>	48.94 <sub>17</sub>	8.93 <sub>301</sub>
	26.5 15.732 <sub>107</sub>	75.70 <sub>46</sub>	14.256 <sub>170</sub>	74.09 <sub>240</sub>	49.11 <sub>10</sub>	11.94 <sub>320</sub>
Nov.	5.5 15.839 <sub>76</sub>	75.24 <sub>61</sub>	14.426 <sub>118</sub>	76.49 <sub>233</sub>	49.21 <sub>2</sub>	15.14 <sub>327</sub>
	15.5 15.915 <sub>46</sub>	74.63 <sub>68</sub>	14.544 <sub>62</sub>	78.82 <sub>222</sub>	49.23 <sub>5</sub>	18.41 <sub>321</sub>
	25.4 15.961 <sub>14</sub>	73.95 <sub>77</sub>	14.606 <sub>8</sub>	81.04 <sub>205</sub>	49.18 <sub>13</sub>	21.62 <sub>305</sub>
Dec.	5.4 15.975 <sub>16</sub>	73.18 <sub>81</sub>	14.614 <sub>52</sub>	83.09 <sub>183</sub>	49.05 <sub>19</sub>	24.67 <sub>274</sub>
	15.4 15.959 <sub>48</sub>	72.37 <sub>81</sub>	14.562 <sub>108</sub>	84.92 <sub>156</sub>	48.86 <sub>26</sub>	27.41 <sub>237</sub>
	25.4 15.911 <sub>78</sub>	71.56 <sub>76</sub>	14.454 <sub>161</sub>	86.48 <sub>122</sub>	48.60 <sub>30</sub>	29.78 <sub>190</sub>
	35.3 15.833	70.80	14.293	87.70	48.30	31.68
Mean Place	11.991	64.38	8.190	67.91	46.22	22.80
Sec $\delta$ , Tan $\delta$	1.002	+0.066	1.669	+1.337	2.002	-1.734
L $\alpha$ , L $\delta$	0.00	+0.3	+0.02	+0.3	-0.03	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+0.7	-0.06	+0.7	+0.08	+0.7
AUTHORITY	A. E.		A. E.		A. E.	

296 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Persei. Mag. 2.1-3.2		$\delta$ Arietis. Mag. 4.5		$\tau^1$ Arietis. Mag. 5.2	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	h m 3 3	$^{\circ}$ $'$ 40 39	h m 3 7	$^{\circ}$ $'$ 19 25	h m 3 16	$^{\circ}$ $'$ 20 51
Jan. 0.4	7.012 <sub>8</sub>	26.41 <sub>51</sub>	11.275 <sub>96</sub>	56.20 <sub>24</sub>	44.643 <sub>88</sub>	58.61 <sub>17</sub>
10.3	6.877 <sub>135</sub>	26.92 <sub>167</sub>	11.179 <sub>121</sub>	55.96 <sub>33</sub>	44.555 <sub>119</sub>	58.44 <sub>26</sub>
20.3	6.710 <sub>197</sub>	27.17 <sub>7</sub>	11.058 <sub>148</sub>	55.63 <sub>43</sub>	44.436 <sub>146</sub>	58.18 <sub>37</sub>
30.3	6.513 <sub>216</sub>	27.10 <sub>36</sub>	10.910 <sub>162</sub>	55.20 <sub>50</sub>	44.290 <sub>165</sub>	57.81 <sub>46</sub>
Feb. 9.2	6.297 <sub>224</sub>	26.74 <sub>66</sub>	10.748 <sub>173</sub>	54.70 <sub>58</sub>	44.125 <sub>177</sub>	57.35 <sub>53</sub>
19.2	6.073 <sub>221</sub>	26.08 <sub>96</sub>	10.575 <sub>173</sub>	54.12 <sub>61</sub>	43.948 <sub>177</sub>	56.82 <sub>60</sub>
Mar. 1.2	5.852 <sub>207</sub>	25.12 <sub>114</sub>	10.402 <sub>161</sub>	53.51 <sub>65</sub>	43.771 <sub>169</sub>	56.22 <sub>64</sub>
11.2	5.645 <sub>179</sub>	23.98 <sub>134</sub>	10.241 <sub>142</sub>	52.86 <sub>61</sub>	43.602 <sub>150</sub>	55.58 <sub>64</sub>
21.1	5.466 <sub>139</sub>	22.64 <sub>146</sub>	10.099 <sub>113</sub>	52.25 <sub>58</sub>	43.452 <sub>121</sub>	54.94 <sub>61</sub>
31.1	5.327 <sub>93</sub>	21.18 <sub>150</sub>	9.986 <sub>75</sub>	51.67 <sub>47</sub>	43.331 <sub>85</sub>	54.33 <sub>55</sub>
Apr. 10.1	5.234 <sub>39</sub>	19.68 <sub>146</sub>	9.911 <sub>32</sub>	51.20 <sub>36</sub>	43.246 <sub>42</sub>	53.78 <sub>43</sub>
20.1	5.195 <sub>20</sub>	18.22 <sub>137</sub>	9.879 <sub>14</sub>	50.84 <sub>20</sub>	43.204 <sub>6</sub>	53.35 <sub>29</sub>
30.0	5.215 <sub>81</sub>	16.85 <sub>126</sub>	9.893 <sub>65</sub>	50.64 <sub>1</sub>	43.210 <sub>55</sub>	53.06 <sub>11</sub>
May 10.0	5.296 <sub>138</sub>	15.59 <sub>102</sub>	9.958 <sub>112</sub>	50.63 <sub>19</sub>	43.265 <sub>103</sub>	52.95 <sub>8</sub>
20.0	5.434 <sub>194</sub>	14.57 <sub>80</sub>	10.070 <sub>157</sub>	50.82 <sub>40</sub>	43.368 <sub>151</sub>	53.03 <sub>28</sub>
29.9	5.628 <sub>243</sub>	13.77 <sub>51</sub>	10.227 <sub>201</sub>	51.22 <sub>61</sub>	43.519 <sub>193</sub>	53.31 <sub>49</sub>
June 8.9	5.871 <sub>286</sub>	13.26 <sub>23</sub>	10.428 <sub>237</sub>	51.83 <sub>81</sub>	43.712 <sub>231</sub>	53.80 <sub>69</sub>
18.9	6.157 <sub>323</sub>	13.03 <sub>7</sub>	10.665 <sub>266</sub>	52.64 <sub>100</sub>	43.943 <sub>262</sub>	54.49 <sub>87</sub>
28.9	6.480 <sub>348</sub>	13.10 <sub>39</sub>	10.931 <sub>288</sub>	53.64 <sub>113</sub>	44.205 <sub>286</sub>	55.36 <sub>103</sub>
July 8.8	6.828 <sub>368</sub>	13.49 <sub>65</sub>	11.219 <sub>303</sub>	54.77 <sub>124</sub>	44.491 <sub>302</sub>	56.39 <sub>116</sub>
18.8	7.196 <sub>375</sub>	14.14 <sub>89</sub>	11.522 <sub>312</sub>	56.01 <sub>134</sub>	44.793 <sub>312</sub>	57.55 <sub>125</sub>
28.8	7.571 <sub>375</sub>	15.03 <sub>114</sub>	11.834 <sub>312</sub>	57.35 <sub>137</sub>	45.105 <sub>315</sub>	58.80 <sub>130</sub>
Aug. 7.8	7.946 <sub>370</sub>	16.17 <sub>136</sub>	12.146 <sub>307</sub>	58.72 <sub>137</sub>	45.420 <sub>309</sub>	60.10 <sub>131</sub>
17.7	8.316 <sub>355</sub>	17.53 <sub>152</sub>	12.453 <sub>295</sub>	60.09 <sub>133</sub>	45.729 <sub>300</sub>	61.41 <sub>127</sub>
27.7	8.671 <sub>335</sub>	19.05 <sub>163</sub>	12.748 <sub>279</sub>	61.42 <sub>125</sub>	46.029 <sub>285</sub>	62.68 <sub>123</sub>
Sept. 6.7	9.006 <sub>313</sub>	20.68 <sub>174</sub>	13.027 <sub>260</sub>	62.67 <sub>117</sub>	46.314 <sub>267</sub>	63.91 <sub>115</sub>
16.6	9.319 <sub>285</sub>	22.42 <sub>180</sub>	13.287 <sub>237</sub>	63.84 <sub>102</sub>	46.581 <sub>245</sub>	65.06 <sub>103</sub>
26.6	9.604 <sub>254</sub>	24.22 <sub>182</sub>	13.524 <sub>211</sub>	64.86 <sub>89</sub>	46.826 <sub>222</sub>	66.09 <sub>91</sub>
Oct. 6.6	9.858 <sub>221</sub>	26.04 <sub>182</sub>	13.735 <sub>184</sub>	65.75 <sub>76</sub>	47.048 <sub>195</sub>	67.00 <sub>78</sub>
16.6	10.079 <sub>182</sub>	27.86 <sub>179</sub>	13.919 <sub>157</sub>	66.51 <sub>60</sub>	47.243 <sub>167</sub>	67.78 <sub>65</sub>
26.5	10.261 <sub>148</sub>	29.65 <sub>174</sub>	14.076 <sub>127</sub>	67.11 <sub>47</sub>	47.410 <sub>138</sub>	68.43 <sub>54</sub>
Nov. 5.5	10.409 <sub>108</sub>	31.39 <sub>166</sub>	14.203 <sub>95</sub>	67.58 <sub>35</sub>	47.548 <sub>107</sub>	68.97 <sub>41</sub>
15.5	10.517 <sub>67</sub>	33.05 <sub>152</sub>	14.298 <sub>63</sub>	67.93 <sub>25</sub>	47.655 <sub>74</sub>	69.38 <sub>31</sub>
25.5	10.584 <sub>22</sub>	34.57 <sub>136</sub>	14.361 <sub>30</sub>	68.18 <sub>12</sub>	47.729 <sub>39</sub>	69.69 <sub>21</sub>
Dec. 5.4	10.606 <sub>20</sub>	35.93 <sub>121</sub>	14.391 <sub>5</sub>	68.30 <sub>3</sub>	47.768 <sub>4</sub>	69.90 <sub>10</sub>
15.4	10.586 <sub>66</sub>	37.14 <sub>97</sub>	14.386 <sub>41</sub>	68.33 <sub>7</sub>	47.772 <sub>33</sub>	70.00 <sub>1</sub>
25.4	10.520 <sub>108</sub>	38.11 <sub>72</sub>	14.345 <sub>74</sub>	68.26 <sub>16</sub>	47.739 <sub>68</sub>	70.01 <sub>9</sub>
35.3	10.412	38.83	14.271	68.10	47.671	69.92
Mean Place	5.199	22.37	9.923	57.86	43.229	60.39
Sec $\delta$ , Tan $\delta$	1.318	+0.859	1.060	+0.353	1.070	+0.381
L $\alpha$ , L $\delta$	+0.02	+0.3	+0.01	+0.3	+0.01	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.04	+0.7	-0.02	+0.7	-0.02	+0.8
AUTHORITY	A. E.		A. E.			

# APPARENT PLACES OF STARS, 1922. 297

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Persei. Mag. 1.9		$\sigma$ Tauri. Mag. 3.8		$\zeta$ Tauri. Mag. 4.3		
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	<sup>h</sup> <sup>m</sup> 3 18	<sup>°</sup> <sup>'</sup> 49 34	<sup>h</sup> <sup>m</sup> 3 20	<sup>°</sup> <sup>'</sup> 8 45	<sup>h</sup> <sup>m</sup> 3 26	<sup>°</sup> <sup>'</sup> 12 40	
Jan.	0.4 10.3 20.3 30.3	46.934 <sup>154</sup> 46.780 <sup>196</sup> 46.584 <sup>235</sup> 46.349 <sup>260</sup>	69.95 <sup>102</sup> 70.97 <sup>64</sup> 71.61 <sup>26</sup> 71.87 <sup>11</sup>	38.059 <sup>83</sup> 37.976 <sup>111</sup> 37.865 <sup>139</sup> 37.726 <sup>156</sup>	14.02 <sup>61</sup> 13.41 <sup>60</sup> 12.81 <sup>56</sup> 12.25 <sup>54</sup>	35.190 <sup>82</sup> 35.108 <sup>109</sup> 34.999 <sup>138</sup> 34.861 <sup>156</sup>	8.95 <sup>47</sup> 8.48 <sup>50</sup> 7.98 <sup>47</sup> 7.51 <sup>49</sup>
Feb.	9.3 19.2	46.089 <sup>275</sup> 45.814 <sup>272</sup>	71.76 <sup>49</sup> 71.27 <sup>85</sup>	37.570 <sup>166</sup> 37.404 <sup>168</sup>	11.71 <sup>47</sup> 11.24 <sup>40</sup>	34.705 <sup>170</sup> 34.535 <sup>172</sup>	7.02 <sup>49</sup> 6.53 <sup>45</sup>
Mar.	1.2 11.2 21.2 31.1	45.542 <sup>260</sup> 45.282 <sup>225</sup> 45.057 <sup>185</sup> 44.872 <sup>133</sup>	70.42 <sup>116</sup> 69.26 <sup>145</sup> 67.81 <sup>164</sup> 66.17 <sup>178</sup>	37.236 <sup>161</sup> 37.075 <sup>145</sup> 36.930 <sup>119</sup> 36.811 <sup>84</sup>	10.84 <sup>33</sup> 10.51 <sup>22</sup> 10.29 <sup>9</sup> 10.20 <sup>6</sup>	34.363 <sup>165</sup> 34.198 <sup>148</sup> 34.050 <sup>125</sup> 33.925 <sup>89</sup>	6.08 <sup>40</sup> 5.68 <sup>34</sup> 5.34 <sup>26</sup> 5.08 <sup>14</sup>
Apr.	10.1 20.1 30.0	44.739 <sup>72</sup> 44.667 <sup>8</sup> 44.659 <sup>66</sup>	64.39 <sup>184</sup> 62.55 <sup>180</sup> 60.75 <sup>173</sup>	36.727 <sup>45</sup> 36.682 <sup>2</sup> 36.680 <sup>46</sup>	10.26 <sup>22</sup> 10.48 <sup>42</sup> 10.90 <sup>61</sup>	33.836 <sup>50</sup> 33.786 <sup>6</sup> 33.780 <sup>42</sup>	4.94 <sup>2</sup> 4.96 <sup>19</sup> 5.15 <sup>36</sup>
May	10.0 20.0 30.0	44.725 <sup>131</sup> 44.856 <sup>197</sup> 45.053 <sup>258</sup>	59.02 <sup>156</sup> 57.46 <sup>135</sup> 56.11 <sup>107</sup>	36.726 <sup>91</sup> 36.817 <sup>135</sup> 36.952 <sup>177</sup>	11.51 <sup>78</sup> 12.29 <sup>99</sup> 13.28 <sup>113</sup>	33.822 <sup>89</sup> 33.911 <sup>133</sup> 34.044 <sup>175</sup>	5.51 <sup>54</sup> 6.05 <sup>76</sup> 6.81 <sup>92</sup>
June	8.9 18.9 28.9	45.311 <sup>307</sup> 45.618 <sup>353</sup> 45.971 <sup>383</sup>	55.04 <sup>77</sup> 54.27 <sup>45</sup> 53.82 <sup>12</sup>	37.129 <sup>214</sup> 37.343 <sup>244</sup> 37.587 <sup>266</sup>	14.41 <sup>129</sup> 15.70 <sup>139</sup> 17.09 <sup>147</sup>	34.219 <sup>212</sup> 34.431 <sup>243</sup> 34.674 <sup>269</sup>	7.73 <sup>106</sup> 8.79 <sup>119</sup> 9.98 <sup>128</sup>
July	8.8 18.8 28.8	46.354 <sup>411</sup> 46.765 <sup>424</sup> 47.189 <sup>432</sup>	53.70 <sup>20</sup> 53.90 <sup>54</sup> 54.44 <sup>81</sup>	37.853 <sup>285</sup> 38.138 <sup>294</sup> 38.432 <sup>296</sup>	18.56 <sup>148</sup> 20.04 <sup>148</sup> 21.52 <sup>141</sup>	34.943 <sup>286</sup> 35.229 <sup>296</sup> 35.525 <sup>301</sup>	11.26 <sup>136</sup> 12.62 <sup>138</sup> 14.00 <sup>136</sup>
Aug.	7.8 17.7 27.7	47.621 <sup>424</sup> 48.045 <sup>416</sup> 48.461 <sup>400</sup>	55.25 <sup>109</sup> 56.34 <sup>135</sup> 57.69 <sup>155</sup>	38.728 <sup>294</sup> 39.022 <sup>285</sup> 39.307 <sup>271</sup>	22.93 <sup>131</sup> 24.24 <sup>117</sup> 25.41 <sup>98</sup>	35.826 <sup>299</sup> 36.125 <sup>290</sup> 36.415 <sup>277</sup>	15.36 <sup>126</sup> 16.62 <sup>118</sup> 17.80 <sup>105</sup>
Sept.	6.7 16.7 26.6	48.861 <sup>371</sup> 49.232 <sup>345</sup> 49.577 <sup>311</sup>	59.24 <sup>176</sup> 61.00 <sup>191</sup> 62.91 <sup>199</sup>	39.578 <sup>256</sup> 39.834 <sup>233</sup> 40.067 <sup>211</sup>	26.39 <sup>80</sup> 27.19 <sup>56</sup> 27.75 <sup>35</sup>	36.692 <sup>264</sup> 36.956 <sup>241</sup> 37.197 <sup>219</sup>	18.85 <sup>88</sup> 19.73 <sup>70</sup> 20.43 <sup>50</sup>
Oct.	6.6 16.6 26.5	49.888 <sup>277</sup> 50.165 <sup>236</sup> 50.401 <sup>189</sup>	64.90 <sup>209</sup> 66.99 <sup>212</sup> 69.11 <sup>213</sup>	40.278 <sup>185</sup> 40.463 <sup>161</sup> 40.624 <sup>132</sup>	28.10 <sup>15</sup> 28.25 <sup>5</sup> 28.20 <sup>20</sup>	37.416 <sup>194</sup> 37.610 <sup>170</sup> 37.780 <sup>141</sup>	20.93 <sup>33</sup> 21.26 <sup>16</sup> 21.42 <sup>2</sup>
Nov.	5.5 15.5 25.5	50.590 <sup>144</sup> 50.734 <sup>96</sup> 50.830 <sup>38</sup>	71.24 <sup>211</sup> 73.35 <sup>201</sup> 75.36 <sup>189</sup>	40.756 <sup>101</sup> 40.857 <sup>70</sup> 40.927 <sup>39</sup>	28.00 <sup>34</sup> 27.66 <sup>46</sup> 27.20 <sup>53</sup>	37.921 <sup>113</sup> 38.034 <sup>78</sup> 38.112 <sup>45</sup>	21.44 <sup>12</sup> 21.32 <sup>21</sup> 21.11 <sup>30</sup>
Dec.	5.4 15.4 25.4 35.4	50.868 <sup>13</sup> 50.855 <sup>70</sup> 50.785 <sup>123</sup> 50.662	77.25 <sup>172</sup> 78.97 <sup>145</sup> 80.42 <sup>124</sup> 81.66	40.966 <sup>5</sup> 40.971 <sup>29</sup> 40.942 <sup>63</sup> 40.879	26.67 <sup>58</sup> 26.09 <sup>59</sup> 25.50 <sup>61</sup> 24.89	38.157 <sup>12</sup> 38.169 <sup>24</sup> 38.145 <sup>59</sup> 38.086	20.81 <sup>37</sup> 20.44 <sup>41</sup> 20.03 <sup>45</sup> 19.58
Mean Place	44.691	65.21	36.793	19.22	33.852	13.36	
Sec $\delta$ , Tan $\delta$	1.542	+1.174	1.012	+0.154	1.025	+0.225	
L $\alpha$ , L $\delta$	+0.02	+0.3	0.00	+0.3	0.00	+0.2	
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.05	+0.8	-0.01	+0.8	-0.01	+0.8	

AUTHORITY

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## 298 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Eridani. Mag. 3·8		45 G. Horologii. Mag. 5·6		τ <sup>5</sup> Eridani. Mag. 4·3		
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.	
	<sup>h</sup> <sup>m</sup> 3 29	<sup>°</sup> <sup>'</sup> 9 43	<sup>h</sup> <sup>m</sup> 3 30	<sup>°</sup> <sup>'</sup> 50 38	<sup>h</sup> <sup>m</sup> 3 30	<sup>°</sup> <sup>'</sup> 21 53	
Jan.	0·4 10·3 20·3 30·3	16·400 <sup>94</sup> 16·306 <sup>120</sup> 16·186 <sup>146</sup> 16·040 <sup>163</sup>	27·22 <sup>126</sup> 28·48 <sup>103</sup> 29·51 <sup>81</sup> 30·32 <sup>57</sup>	16·123 <sup>220</sup> 15·903 <sup>260</sup> 15·643 <sup>289</sup> 15·354 <sup>309</sup>	52·77 <sup>197</sup> 54·74 <sup>148</sup> 56·22 <sup>97</sup> 57·19 <sup>42</sup>	21·542 <sup>106</sup> 21·436 <sup>135</sup> 21·301 <sup>161</sup> 21·140 <sup>181</sup>	50·98 <sup>158</sup> 52·56 <sup>128</sup> 53·84 <sup>90</sup> 54·80 <sup>61</sup>
Feb.	9·3 19·2	15·877 <sup>175</sup> 15·702 <sup>176</sup>	30·89 31·23 <sup>8</sup>	15·045 <sup>321</sup> 14·724 <sup>319</sup>	57·61 <sup>11</sup> 57·50 <sup>64</sup>	20·959 <sup>191</sup> 20·768 <sup>194</sup>	55·41 <sup>25</sup> 55·66 <sup>11</sup>
Mar.	1·2 11·2 21·2 31·1	15·526 <sup>170</sup> 15·356 <sup>156</sup> 15·200 <sup>132</sup> 15·068 <sup>95</sup>	31·31 31·12 <sup>45</sup> 30·67 <sup>70</sup> 29·97 <sup>97</sup>	14·405 <sup>307</sup> 14·098 <sup>283</sup> 13·815 <sup>249</sup> 13·566 <sup>205</sup>	56·86 <sup>115</sup> 55·71 <sup>163</sup> 54·08 <sup>206</sup> 52·02 <sup>245</sup>	20·574 <sup>188</sup> 20·386 <sup>172</sup> 20·214 <sup>147</sup> 20·067 <sup>114</sup>	55·55 <sup>47</sup> 55·08 <sup>81</sup> 54·27 <sup>115</sup> 53·12 <sup>147</sup>
Apr.	10·1 20·1 30·0	14·973 <sup>61</sup> 14·912 <sup>18</sup> 14·894 <sup>28</sup>	29·00 <sup>120</sup> 27·80 <sup>145</sup> 26·35 <sup>164</sup>	13·361 <sup>153</sup> 13·208 <sup>95</sup> 13·113 <sup>33</sup>	49·57 <sup>278</sup> 46·79 <sup>305</sup> 43·74 <sup>325</sup>	19·953 <sup>76</sup> 19·877 <sup>32</sup> 19·845 <sup>15</sup>	51·65 <sup>174</sup> 49·91 <sup>202</sup> 47·89 <sup>223</sup>
May	10·0 20·0 30·0	14·922 <sup>74</sup> 14·996 <sup>118</sup> 15·114 <sup>158</sup>	24·71 <sup>184</sup> 22·87 <sup>197</sup> 20·90 <sup>207</sup>	13·080 <sup>32</sup> 13·112 <sup>96</sup> 13·208 <sup>157</sup>	40·49 <sup>339</sup> 37·10 <sup>344</sup> 33·66 <sup>341</sup>	19·860 <sup>62</sup> 19·922 <sup>110</sup> 20·032 <sup>153</sup>	45·66 <sup>240</sup> 43·26 <sup>254</sup> 40·72 <sup>260</sup>
June	8·9 18·9 28·9	15·272 <sup>195</sup> 15·467 <sup>228</sup> 15·695 <sup>254</sup>	18·83 <sup>212</sup> 16·71 <sup>213</sup> 14·58 <sup>206</sup>	13·365 <sup>214</sup> 13·579 <sup>267</sup> 13·846 <sup>310</sup>	30·25 <sup>330</sup> 26·95 <sup>311</sup> 23·84 <sup>282</sup>	20·185 <sup>192</sup> 20·377 <sup>228</sup> 20·605 <sup>255</sup>	38·12 <sup>260</sup> 35·52 <sup>253</sup> 32·99 <sup>241</sup>
July	8·8 18·8 28·8	15·949 <sup>274</sup> 16·223 <sup>284</sup> 16·507 <sup>289</sup>	12·52 <sup>193</sup> 10·59 <sup>177</sup> 8·82 <sup>155</sup>	14·156 <sup>347</sup> 14·503 <sup>373</sup> 14·876 <sup>389</sup>	21·02 <sup>247</sup> 18·55 <sup>203</sup> 16·52 <sup>154</sup>	20·860 <sup>278</sup> 21·138 <sup>291</sup> 21·429 <sup>299</sup>	30·58 <sup>221</sup> 28·37 <sup>194</sup> 26·43 <sup>161</sup>
Aug.	7·8 17·7 27·7	16·796 <sup>288</sup> 17·084 <sup>280</sup> 17·364 <sup>268</sup>	7·27 <sup>126</sup> 6·01 <sup>93</sup> 5·08 <sup>60</sup>	15·265 <sup>396</sup> 15·661 <sup>392</sup> 16·053 <sup>379</sup>	14·98 <sup>99</sup> 13·99 <sup>41</sup> 13·58 <sup>18</sup>	21·728 <sup>300</sup> 22·028 <sup>293</sup> 22·321 <sup>282</sup>	24·82 <sup>125</sup> 23·57 <sup>82</sup> 22·75 <sup>37</sup>
Sept.	6·7 16·7 26·6	17·632 <sup>252</sup> 17·884 <sup>230</sup> 18·114 <sup>208</sup>	4·48 <sup>23</sup> 4·25 <sup>13</sup> 4·38 <sup>47</sup>	16·432 <sup>355</sup> 16·787 <sup>324</sup> 17·111 <sup>286</sup>	13·76 <sup>78</sup> 14·54 <sup>136</sup> 15·90 <sup>189</sup>	22·603 <sup>265</sup> 22·868 <sup>243</sup> 23·111 <sup>219</sup>	22·38 <sup>7</sup> 22·45 <sup>53</sup> 22·98 <sup>96</sup>
Oct.	6·6 16·6 26·5	18·322 <sup>182</sup> 18·504 <sup>156</sup> 18·660 <sup>125</sup>	4·85 <sup>81</sup> 5·66 <sup>109</sup> 6·75 <sup>130</sup>	17·397 <sup>240</sup> 17·637 <sup>191</sup> 17·828 <sup>137</sup>	17·79 <sup>233</sup> 20·12 <sup>271</sup> 22·83 <sup>298</sup>	23·330 <sup>191</sup> 23·521 <sup>160</sup> 23·681 <sup>129</sup>	23·94 <sup>133</sup> 25·27 <sup>167</sup> 26·94 <sup>192</sup>
Nov.	5·5 15·5 25·5	18·785 <sup>94</sup> 18·879 <sup>61</sup> 18·940 <sup>31</sup>	8·05 <sup>148</sup> 9·53 <sup>156</sup> 11·09 <sup>159</sup>	17·965 <sup>80</sup> 18·045 <sup>23</sup> 18·068 <sup>34</sup>	25·81 <sup>313</sup> 28·94 <sup>317</sup> 32·11 <sup>308</sup>	23·810 <sup>94</sup> 23·904 <sup>60</sup> 23·964 <sup>23</sup>	28·86 <sup>208</sup> 30·94 <sup>218</sup> 33·12 <sup>218</sup>
Dec.	5·4 15·4 25·4 35·4	18·971 <sup>6</sup> 18·965 <sup>42</sup> 18·923 <sup>71</sup> 18·852	12·68 <sup>155</sup> 14·23 <sup>146</sup> 15·69 <sup>133</sup> 17·02	18·034 <sup>91</sup> 17·943 <sup>143</sup> 17·800 <sup>192</sup> 17·608	35·19 <sup>289</sup> 38·08 <sup>260</sup> 40·68 <sup>221</sup> 42·89	23·987 <sup>13</sup> 23·974 <sup>50</sup> 23·924 <sup>85</sup> 23·839	35·30 <sup>210</sup> 37·40 <sup>194</sup> 39·34 <sup>172</sup> 41·06
Mean Place	15·269	16·76	14·952	34·00	20·444	37·70	
Sec δ, Tan δ	1·015	—0·171	1·577	—1·219	1·077	—0·402	
L α, L δ	0·00	+0·2	—0·02	+0·2	—0·01	+0·2	
ω α, ω δ	+0·01	+0·8	+0·05	+0·8	+0·02	+0·8	
AUTHORITY	A. E.		A. N.				



APPARENT PLACES OF STARS, 1922. 299

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	11 Tauri. Mag. 6.2		8 Persei. Mag. 3.1		8 Eridani. Mag. 3.7	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 3 <sup>m</sup> 36 <sup>s</sup>	<sup>°</sup> 25 <sup>'</sup> 4	<sup>h</sup> 3 <sup>m</sup> 37 <sup>s</sup>	<sup>°</sup> 47 <sup>'</sup> 32	<sup>h</sup> 3 <sup>m</sup> 39 <sup>s</sup>	<sup>°</sup> 10 <sup>'</sup> 1
Jan. 0.4	8.134 <sub>79</sub>	40.33 <sub>5</sub>	24.042 <sub>125</sub>	24.91 <sub>105</sub>	31.817 <sub>82</sub>	46.17 <sub>128</sub>
10.3	8.055 <sub>114</sub>	40.38 <sub>6</sub>	23.917 <sub>173</sub>	25.96 <sub>73</sub>	31.735 <sub>113</sub>	47.45 <sub>108</sub>
20.3	7.941 <sub>146</sub>	40.32 <sub>19</sub>	23.744 <sub>212</sub>	26.69 <sub>38</sub>	31.622 <sub>140</sub>	48.53 <sub>87</sub>
30.3	7.795 <sub>168</sub>	40.13 <sub>32</sub>	23.532 <sub>244</sub>	27.07 <sub>5</sub>	31.482 <sub>161</sub>	49.40 <sub>62</sub>
Feb. 9.3	7.627 <sub>185</sub>	39.81 <sub>45</sub>	23.288 <sub>258</sub>	27.12 <sub>32</sub>	31.321 <sub>175</sub>	50.02 <sub>37</sub>
19.2	7.442 <sub>189</sub>	39.36 <sub>54</sub>	23.030 <sub>268</sub>	26.80 <sub>65</sub>	31.146 <sub>179</sub>	50.39 <sub>11</sub>
Mar. 1.2	7.253 <sub>183</sub>	38.82 <sub>64</sub>	22.762 <sub>258</sub>	26.15 <sub>99</sub>	30.967 <sub>175</sub>	50.50 <sub>15</sub>
11.2	7.070 <sub>166</sub>	38.18 <sub>70</sub>	22.504 <sub>229</sub>	25.16 <sub>122</sub>	30.792 <sub>161</sub>	50.35 <sub>42</sub>
21.2	6.904 <sub>140</sub>	37.48 <sub>72</sub>	22.275 <sub>196</sub>	23.94 <sub>146</sub>	30.631 <sub>139</sub>	49.93 <sub>67</sub>
31.1	6.764 <sub>105</sub>	36.76 <sub>69</sub>	22.079 <sub>148</sub>	22.48 <sub>161</sub>	30.492 <sub>108</sub>	49.26 <sub>94</sub>
Apr. 10.1	6.659 <sub>61</sub>	36.07 <sub>63</sub>	21.931 <sub>92</sub>	20.87 <sub>168</sub>	30.384 <sub>71</sub>	48.32 <sub>119</sub>
20.1	6.598 <sub>14</sub>	35.44 <sub>52</sub>	21.839 <sub>28</sub>	19.19 <sub>169</sub>	30.313 <sub>29</sub>	47.13 <sub>142</sub>
30.0	6.584 <sub>37</sub>	34.92 <sub>39</sub>	21.811 <sub>37</sub>	17.50 <sub>161</sub>	30.284 <sub>15</sub>	45.71 <sub>163</sub>
May 10.0	6.621 <sub>87</sub>	34.53 <sub>22</sub>	21.848 <sub>106</sub>	15.89 <sub>149</sub>	30.299 <sub>62</sub>	44.08 <sub>182</sub>
20.0	6.708 <sub>136</sub>	34.31 <sub>2</sub>	21.954 <sub>167</sub>	14.40 <sub>132</sub>	30.361 <sub>106</sub>	42.26 <sub>198</sub>
30.0	6.844 <sub>182</sub>	34.29 <sub>17</sub>	22.121 <sub>227</sub>	13.08 <sub>109</sub>	30.467 <sub>149</sub>	40.28 <sub>208</sub>
June 8.9	7.026 <sub>221</sub>	34.46 <sub>37</sub>	22.348 <sub>278</sub>	11.99 <sub>79</sub>	30.616 <sub>187</sub>	38.20 <sub>215</sub>
18.9	7.247 <sub>257</sub>	34.83 <sub>57</sub>	22.626 <sub>326</sub>	11.20 <sub>52</sub>	30.803 <sub>220</sub>	36.05 <sub>216</sub>
28.9	7.504 <sub>283</sub>	35.40 <sub>74</sub>	22.952 <sub>359</sub>	10.68 <sub>25</sub>	31.023 <sub>247</sub>	33.89 <sub>210</sub>
July 8.8	7.787 <sub>303</sub>	36.14 <sub>89</sub>	23.311 <sub>386</sub>	10.43 <sub>7</sub>	31.270 <sub>267</sub>	31.79 <sub>199</sub>
18.8	8.090 <sub>315</sub>	37.03 <sub>102</sub>	23.697 <sub>404</sub>	10.50 <sub>36</sub>	31.537 <sub>280</sub>	29.80 <sub>182</sub>
28.8	8.405 <sub>321</sub>	38.05 <sub>110</sub>	24.101 <sub>414</sub>	10.86 <sub>65</sub>	31.817 <sub>288</sub>	27.98 <sub>159</sub>
Aug. 7.8	8.726 <sub>319</sub>	39.15 <sub>116</sub>	24.515 <sub>415</sub>	11.51 <sub>93</sub>	32.105 <sub>289</sub>	26.39 <sub>132</sub>
17.7	9.045 <sub>314</sub>	40.31 <sub>118</sub>	24.930 <sub>406</sub>	12.44 <sub>111</sub>	32.394 <sub>284</sub>	25.07 <sub>100</sub>
27.7	9.359 <sub>301</sub>	41.49 <sub>116</sub>	25.336 <sub>397</sub>	13.55 <sub>135</sub>	32.678 <sub>273</sub>	24.07 <sub>65</sub>
Sept. 6.7	9.660 <sub>285</sub>	42.65 <sub>113</sub>	25.733 <sub>373</sub>	14.90 <sub>152</sub>	32.951 <sub>259</sub>	23.42 <sub>28</sub>
16.7	9.945 <sub>266</sub>	43.78 <sub>105</sub>	26.106 <sub>349</sub>	16.42 <sub>166</sub>	33.210 <sub>240</sub>	23.14 <sub>9</sub>
26.6	10.211 <sub>244</sub>	44.83 <sub>99</sub>	26.455 <sub>320</sub>	18.08 <sub>176</sub>	33.450 <sub>219</sub>	23.23 <sub>45</sub>
Oct. 6.6	10.455 <sub>220</sub>	45.82 <sub>89</sub>	26.775 <sub>291</sub>	19.84 <sub>186</sub>	33.669 <sub>194</sub>	23.68 <sub>78</sub>
16.6	10.675 <sub>192</sub>	46.71 <sub>80</sub>	27.066 <sub>254</sub>	21.70 <sub>190</sub>	33.863 <sub>169</sub>	24.46 <sub>106</sub>
26.5	10.867 <sub>163</sub>	47.51 <sub>72</sub>	27.320 <sub>214</sub>	23.60 <sub>194</sub>	34.032 <sub>139</sub>	25.52 <sub>130</sub>
Nov. 5.5	11.030 <sub>132</sub>	48.23 <sub>62</sub>	27.534 <sub>167</sub>	25.54 <sub>192</sub>	34.171 <sub>109</sub>	26.82 <sub>147</sub>
15.5	11.162 <sub>98</sub>	48.85 <sub>52</sub>	27.701 <sub>120</sub>	27.46 <sub>188</sub>	34.280 <sub>78</sub>	28.29 <sub>158</sub>
25.5	11.260 <sub>61</sub>	49.37 <sub>45</sub>	27.821 <sub>68</sub>	29.34 <sub>177</sub>	34.358 <sub>44</sub>	29.87 <sub>161</sub>
Dec. 5.4	11.321 <sub>24</sub>	49.82 <sub>35</sub>	27.889 <sub>15</sub>	31.11 <sub>164</sub>	34.402 <sub>8</sub>	31.48 <sub>158</sub>
15.4	11.345 <sub>17</sub>	50.17 <sub>25</sub>	27.904 <sub>39</sub>	32.75 <sub>146</sub>	34.410 <sub>27</sub>	33.06 <sub>150</sub>
25.4	11.328 <sub>57</sub>	50.42 <sub>15</sub>	27.865 <sub>93</sub>	34.21 <sub>122</sub>	34.383 <sub>61</sub>	34.56 <sub>136</sub>
35.4	11.271	50.57	27.772	35.43	34.322	35.92
Mean Place	6.569	42.14	21.813	21.98	30.627	35.58
Sec δ, Tan δ	1.104	+0.468	1.481	+1.093	1.016	-0.177
L α, L δ	+0.01	+0.2	+0.02	+0.2	0.00	+0.2
ω α, ω δ	-0.02	+0.8	-0.04	+0.8	+0.01	+0.8

AUTHORITY

A. E.

A. N.

# 300 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	17 Tauri. Mag. 3·8		η Tauri. Mag. 3·0		γ Hydri. Mag. 3·2	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 3 40	<sup>°</sup> <sup>'</sup> 23 52	<sup>h</sup> <sup>m</sup> 3 42	<sup>°</sup> <sup>'</sup> 23 51	<sup>h</sup> <sup>m</sup> 3 48	<sup>°</sup> <sup>'</sup> 74 28
Jan. 0·4	15·954 <sup>s</sup> 74	6·76 <sup>2</sup>	52·221 <sup>s</sup> 75	51·50 <sup>2</sup>	28·17 <sup>s</sup> 65	62·48 <sup>207</sup>
10·3	15·880 <sup>111</sup>	6·78 <sup>10</sup>	52·146 <sup>108</sup>	51·52 <sup>7</sup>	27·52 <sup>74</sup>	64·55 <sup>153</sup>
20·3	15·769 <sup>142</sup>	6·68 <sup>20</sup>	52·038 <sup>143</sup>	51·45 <sup>20</sup>	26·78 <sup>80</sup>	66·08 <sup>99</sup>
30·3	15·627 <sup>166</sup>	6·48 <sup>32</sup>	51·895 <sup>165</sup>	51·25 <sup>31</sup>	25·98 <sup>85</sup>	67·07 <sup>41</sup>
Feb. 9·3	15·461 <sup>182</sup>	6·16 <sup>42</sup>	51·730 <sup>182</sup>	50·94 <sup>40</sup>	25·13 <sup>87</sup>	67·48 <sup>19</sup>
19·2	15·279 <sup>188</sup>	5·74 <sup>52</sup>	51·548 <sup>187</sup>	50·54 <sup>52</sup>	24·26 <sup>87</sup>	67·29 <sup>74</sup>
Mar. 1·2	15·091 <sup>182</sup>	5·22 <sup>60</sup>	51·361 <sup>183</sup>	50·02 <sup>59</sup>	23·39 <sup>84</sup>	66·55 <sup>131</sup>
11·2	14·909 <sup>167</sup>	4·62 <sup>64</sup>	51·178 <sup>171</sup>	49·43 <sup>64</sup>	22·55 <sup>79</sup>	65·24 <sup>179</sup>
21·2	14·742 <sup>142</sup>	3·98 <sup>66</sup>	51·007 <sup>140</sup>	48·79 <sup>65</sup>	21·76 <sup>71</sup>	63·45 <sup>223</sup>
31·1	14·600 <sup>107</sup>	3·32 <sup>63</sup>	50·867 <sup>110</sup>	48·14 <sup>62</sup>	21·05 <sup>63</sup>	61·22 <sup>263</sup>
Apr. 10·1	14·493 <sup>65</sup>	2·69 <sup>56</sup>	50·757 <sup>66</sup>	47·52 <sup>55</sup>	20·42 <sup>51</sup>	58·59 <sup>296</sup>
20·1	14·428 <sup>18</sup>	2·13 <sup>46</sup>	50·691 <sup>21</sup>	46·97 <sup>44</sup>	19·91 <sup>40</sup>	55·63 <sup>324</sup>
30·0	14·410 <sup>32</sup>	1·67 <sup>32</sup>	50·670 <sup>28</sup>	46·53 <sup>31</sup>	19·51 <sup>27</sup>	52·39 <sup>346</sup>
May 10·0	14·442 <sup>83</sup>	1·35 <sup>15</sup>	50·698 <sup>82</sup>	46·22 <sup>18</sup>	19·24 <sup>13</sup>	48·93 <sup>355</sup>
20·0	14·525 <sup>131</sup>	1·20 <sup>3</sup>	50·780 <sup>127</sup>	46·04 <sup>3</sup>	19·11 <sup>2</sup>	45·38 <sup>357</sup>
30·0	14·656 <sup>176</sup>	1·23 <sup>22</sup>	50·907 <sup>173</sup>	46·07 <sup>22</sup>	19·13 <sup>15</sup>	41·81 <sup>353</sup>
June 8·9	14·832 <sup>217</sup>	1·45 <sup>42</sup>	51·080 <sup>215</sup>	46·29 <sup>39</sup>	19·28 <sup>29</sup>	38·28 <sup>339</sup>
18·9	15·049 <sup>251</sup>	1·87 <sup>60</sup>	51·295 <sup>247</sup>	46·68 <sup>61</sup>	19·57 <sup>42</sup>	34·89 <sup>316</sup>
28·9	15·300 <sup>278</sup>	2·47 <sup>77</sup>	51·542 <sup>277</sup>	47·29 <sup>73</sup>	19·99 <sup>53</sup>	31·73 <sup>285</sup>
July 8·9	15·578 <sup>298</sup>	3·24 <sup>90</sup>	51·819 <sup>295</sup>	48·02 <sup>90</sup>	20·52 <sup>63</sup>	28·88 <sup>247</sup>
18·8	15·876 <sup>311</sup>	4·14 <sup>102</sup>	52·114 <sup>311</sup>	48·92 <sup>98</sup>	21·15 <sup>72</sup>	26·41 <sup>200</sup>
28·8	16·187 <sup>318</sup>	5·16 <sup>110</sup>	52·425 <sup>316</sup>	49·90 <sup>109</sup>	21·87 <sup>78</sup>	24·41 <sup>150</sup>
Aug. 7·8	16·505 <sup>317</sup>	6·26 <sup>114</sup>	52·741 <sup>317</sup>	50·99 <sup>111</sup>	22·65 <sup>83</sup>	22·91 <sup>91</sup>
17·7	16·822 <sup>310</sup>	7·40 <sup>114</sup>	53·058 <sup>314</sup>	52·10 <sup>113</sup>	23·48 <sup>83</sup>	22·00 <sup>29</sup>
27·7	17·132 <sup>300</sup>	8·54 <sup>112</sup>	53·372 <sup>302</sup>	53·23 <sup>110</sup>	24·31 <sup>83</sup>	21·71 <sup>32</sup>
Sept. 6·7	17·432 <sup>285</sup>	9·66 <sup>107</sup>	53·674 <sup>286</sup>	54·33 <sup>106</sup>	25·14 <sup>78</sup>	22·03 <sup>98</sup>
16·7	17·717 <sup>266</sup>	10·73 <sup>100</sup>	53·960 <sup>270</sup>	55·39 <sup>98</sup>	25·92 <sup>73</sup>	23·01 <sup>155</sup>
26·6	17·983 <sup>245</sup>	11·73 <sup>91</sup>	54·230 <sup>246</sup>	56·37 <sup>90</sup>	26·65 <sup>65</sup>	24·56 <sup>211</sup>
Oct. 6·6	18·228 <sup>221</sup>	12·64 <sup>81</sup>	54·476 <sup>225</sup>	57·27 <sup>79</sup>	27·30 <sup>53</sup>	26·67 <sup>257</sup>
16·6	18·449 <sup>194</sup>	13·45 <sup>72</sup>	54·701 <sup>195</sup>	58·06 <sup>71</sup>	27·83 <sup>41</sup>	29·24 <sup>296</sup>
26·6	18·643 <sup>166</sup>	14·17 <sup>62</sup>	54·896 <sup>170</sup>	58·77 <sup>61</sup>	28·24 <sup>28</sup>	32·20 <sup>322</sup>
Nov. 5·5	18·809 <sup>135</sup>	14·79 <sup>53</sup>	55·066 <sup>138</sup>	59·38 <sup>52</sup>	28·52 <sup>12</sup>	35·42 <sup>339</sup>
15·5	18·944 <sup>102</sup>	15·32 <sup>45</sup>	55·204 <sup>105</sup>	59·90 <sup>45</sup>	28·64 <sup>3</sup>	38·81 <sup>341</sup>
25·5	19·046 <sup>65</sup>	15·77 <sup>36</sup>	55·309 <sup>66</sup>	60·35 <sup>35</sup>	28·61 <sup>18</sup>	42·22 <sup>332</sup>
Dec. 5·4	19·111 <sup>27</sup>	16·13 <sup>28</sup>	55·375 <sup>30</sup>	60·70 <sup>28</sup>	28·43 <sup>32</sup>	45·54 <sup>310</sup>
15·4	19·138 <sup>13</sup>	16·41 <sup>19</sup>	55·405 <sup>12</sup>	60·98 <sup>20</sup>	28·11 <sup>46</sup>	48·64 <sup>278</sup>
25·4	19·125 <sup>52</sup>	16·60 <sup>10</sup>	55·393 <sup>49</sup>	61·18 <sup>10</sup>	27·65 <sup>58</sup>	51·42 <sup>235</sup>
35·4	19·073	16·70	55·344	61·28	27·07	53·77
Mean Place	14·396	9·10	50·654	53·98	25·71	41·94
Sec δ, Tan δ	1·094	+0·442	1·093	+0·442	3·737	-3·601
L α, L δ	+0·01	+0·2	+0·01	+0·2	-0·08	+0·2
ω α, ω δ	-0·02	+0·8	-0·02	+0·8	+0·13	+0·8
AUTHORITY	A. N.		A. E.		A. E.	

# · APPARENT PLACES OF STARS, 1922. 301

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ζ Persei. Mag. 2·9		ε Persei. Mag. 3·0		γ Eridani. Mag. 3·2	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 3 <sup>m</sup> 49	<sup>°</sup> 31 <sup>'</sup> 39	<sup>h</sup> 3 <sup>m</sup> 52	<sup>°</sup> 39 <sup>'</sup> 46	<sup>h</sup> 3 <sup>m</sup> 54	<sup>°</sup> 13 <sup>'</sup> 43
Jan. 0·4	15·219 <sup>s</sup> <sub>76</sub>	10·23 <sub>37</sub>	38·875 <sup>s</sup> <sub>89</sub>	69·35 <sub>78</sub>	24·625 <sup>s</sup> <sub>80</sub>	57·90 <sub>148</sub>
10·4	15·143 <sub>118</sub>	10·60 <sub>24</sub>	38·786 <sub>132</sub>	70·13 <sub>54</sub>	24·545 <sub>111</sub>	59·38 <sub>128</sub>
20·3	15·025 <sub>152</sub>	10·84 <sub>5</sub>	38·654 <sub>171</sub>	70·67 <sub>30</sub>	24·434 <sub>142</sub>	60·66 <sub>99</sub>
30·3	14·873 <sub>178</sub>	10·89 <sub>15</sub>	38·483 <sub>202</sub>	70·97 <sub>4</sub>	24·292 <sub>160</sub>	61·65 <sub>75</sub>
Feb. 9·3	14·695 <sub>198</sub>	10·74 <sub>33</sub>	38·281 <sub>225</sub>	71·01 <sub>24</sub>	24·132 <sub>178</sub>	62·40 <sub>44</sub>
19·2	14·497 <sub>205</sub>	10·41 <sub>51</sub>	38·056 <sub>231</sub>	70·77 <sub>51</sub>	23·954 <sub>186</sub>	62·84 <sub>15</sub>
Mar. 1·2	14·292 <sub>201</sub>	9·90 <sub>67</sub>	37·825 <sub>225</sub>	70·26 <sub>77</sub>	23·768 <sub>186</sub>	62·99 <sub>14</sub>
11·2	14·091 <sub>184</sub>	9·23 <sub>82</sub>	37·600 <sub>210</sub>	69·49 <sub>94</sub>	23·582 <sub>173</sub>	62·85 <sub>45</sub>
21·2	13·907 <sub>160</sub>	8·41 <sub>88</sub>	37·390 <sub>180</sub>	68·55 <sub>112</sub>	23·409 <sub>151</sub>	62·40 <sub>74</sub>
31·1	13·747 <sub>122</sub>	7·53 <sub>93</sub>	37·210 <sub>140</sub>	67·43 <sub>125</sub>	23·258 <sub>122</sub>	61·66 <sub>103</sub>
Apr. 10·1	13·625 <sub>79</sub>	6·60 <sub>91</sub>	37·070 <sub>96</sub>	66·18 <sub>128</sub>	23·136 <sub>87</sub>	60·63 <sub>127</sub>
20·1	13·546 <sub>30</sub>	5·69 <sub>86</sub>	36·974 <sub>38</sub>	64·90 <sub>126</sub>	23·049 <sub>45</sub>	59·36 <sub>153</sub>
30·1	13·516 <sub>25</sub>	4·83 <sub>78</sub>	36·936 <sub>22</sub>	63·64 <sub>121</sub>	23·004 <sub>0</sub>	57·83 <sub>177</sub>
May 10·0	13·541 <sub>77</sub>	4·05 <sub>62</sub>	36·958 <sub>78</sub>	62·43 <sub>109</sub>	23·004 <sub>45</sub>	56·06 <sub>198</sub>
20·0	13·618 <sub>129</sub>	3·43 <sub>44</sub>	37·036 <sub>134</sub>	61·34 <sub>92</sub>	23·049 <sub>89</sub>	54·08 <sub>208</sub>
30·0	13·747 <sub>179</sub>	2·99 <sub>29</sub>	37·170 <sub>191</sub>	60·42 <sub>75</sub>	23·138 <sub>132</sub>	52·00 <sub>222</sub>
June 8·9	13·926 <sub>222</sub>	2·70 <sub>4</sub>	37·361 <sub>237</sub>	59·67 <sub>51</sub>	23·270 <sub>173</sub>	49·78 <sub>226</sub>
18·9	14·148 <sub>259</sub>	2·66 <sub>14</sub>	37·598 <sub>281</sub>	59·16 <sub>27</sub>	23·443 <sub>208</sub>	47·52 <sub>227</sub>
28·9	14·497 <sub>288</sub>	2·80 <sub>38</sub>	37·879 <sub>310</sub>	58·89 <sub>3</sub>	23·651 <sub>236</sub>	45·25 <sub>219</sub>
July 8·9	14·695 <sub>312</sub>	3·18 <sub>55</sub>	38·189 <sub>340</sub>	58·86 <sub>20</sub>	23·887 <sub>259</sub>	43·06 <sub>206</sub>
18·8	15·007 <sub>329</sub>	3·73 <sub>72</sub>	38·529 <sub>356</sub>	59·06 <sub>46</sub>	24·146 <sub>276</sub>	41·00 <sub>187</sub>
28·8	15·336 <sub>337</sub>	4·45 <sub>88</sub>	38·885 <sub>368</sub>	59·52 <sub>65</sub>	24·422 <sub>287</sub>	39·13 <sub>163</sub>
Aug. 7·8	15·673 <sub>339</sub>	5·33 <sub>98</sub>	39·253 <sub>371</sub>	60·17 <sub>83</sub>	24·709 <sub>290</sub>	37·50 <sub>133</sub>
17·8	16·012 <sub>332</sub>	6·31 <sub>107</sub>	39·624 <sub>365</sub>	61·00 <sub>101</sub>	24·999 <sub>287</sub>	36·17 <sub>98</sub>
27·7	16·344 <sub>324</sub>	7·38 <sub>112</sub>	39·989 <sub>360</sub>	62·01 <sub>114</sub>	25·286 <sub>279</sub>	35·19 <sub>58</sub>
Sept. 6·7	16·668 <sub>309</sub>	8·50 <sub>116</sub>	40·349 <sub>339</sub>	63·15 <sub>124</sub>	25·565 <sub>267</sub>	34·61 <sub>20</sub>
16·7	16·977 <sub>295</sub>	9·66 <sub>114</sub>	40·688 <sub>324</sub>	64·39 <sub>134</sub>	25·832 <sub>251</sub>	34·41 <sub>21</sub>
26·6	17·272 <sub>268</sub>	10·80 <sub>115</sub>	41·012 <sub>301</sub>	65·73 <sub>139</sub>	26·083 <sub>230</sub>	34·62 <sub>60</sub>
Oct. 6·6	17·540 <sub>247</sub>	11·95 <sub>110</sub>	41·313 <sub>272</sub>	67·12 <sub>143</sub>	26·313 <sub>208</sub>	35·22 <sub>94</sub>
16·6	17·787 <sub>220</sub>	13·05 <sub>108</sub>	41·585 <sub>243</sub>	68·55 <sub>143</sub>	26·521 <sub>180</sub>	36·16 <sub>127</sub>
26·6	18·007 <sub>187</sub>	14·13 <sub>103</sub>	41·828 <sub>209</sub>	69·98 <sub>146</sub>	26·701 <sub>156</sub>	37·43 <sub>153</sub>
Nov. 5·5	18·194 <sub>153</sub>	15·16 <sub>98</sub>	42·037 <sub>174</sub>	71·44 <sub>143</sub>	26·857 <sub>122</sub>	38·96 <sub>169</sub>
15·5	18·347 <sub>119</sub>	16·14 <sub>90</sub>	42·211 <sub>133</sub>	72·87 <sub>139</sub>	26·979 <sub>88</sub>	40·65 <sub>184</sub>
25·5	18·466 <sub>79</sub>	17·04 <sub>84</sub>	42·344 <sub>87</sub>	74·26 <sub>132</sub>	27·067 <sub>55</sub>	42·49 <sub>188</sub>
Dec. 5·5	18·545 <sub>37</sub>	17·88 <sub>76</sub>	42·431 <sub>39</sub>	75·58 <sub>122</sub>	27·122 <sub>19</sub>	44·37 <sub>183</sub>
15·4	18·582 <sub>8</sub>	18·64 <sub>61</sub>	42·470 <sub>11</sub>	76·80 <sub>107</sub>	27·141 <sub>17</sub>	46·20 <sub>174</sub>
25·4	18·574 <sub>50</sub>	19·25 <sub>50</sub>	42·459 <sub>56</sub>	77·87 <sub>94</sub>	27·124 <sub>57</sub>	47·94 <sub>160</sub>
35·4	18·524	19·75	42·403	78·81	27·067	49·54
Mean Place	13·469	11·35	36·888	69·03	23·383	46·21
Sec δ, Tan δ	1·175	+0·617	1·301	+0·833	1·029	-0·244
L α, L δ	+0·01	+0·2	+0·02	+0·2	-0·01	+0·2
ω α, ω δ	-0·02	+0·8	-0·03	+0·8	+0·01	+0·9
AUTHORITY	A. E.		A. E.		A. E.	

# 302 APPARENT PLACES OF STARS, 1922.

· AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	A Tauri. Mag. 4·5		43 Tauri. Mag. 5·7		o <sup>1</sup> Eridani. Mag. 4·1	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	h m 4 0	° ′ 21 52	h m 4 4	° ′ 19 24	h m 4 8	° ′ 7 2
Jan. 0·4	6·449 <sup>s</sup> <sub>59</sub>	7·92 <sup>4</sup>	38·727 <sup>s</sup> <sub>53</sub>	9·56 <sup>15</sup>	4·754 <sup>s</sup> <sub>63</sub>	34·22 <sup>129</sup>
10·4	6·390 <sup>97</sup>	7·88 <sup>10</sup>	38·674 <sup>92</sup>	9·41 <sup>19</sup>	4·691 <sup>98</sup>	35·51 <sup>114</sup>
20·3	6·293 <sup>131</sup>	7·78 <sup>19</sup>	38·582 <sup>127</sup>	9·22 <sup>24</sup>	4·593 <sup>125</sup>	36·65 <sup>93</sup>
30·3	6·162 <sup>158</sup>	7·59 <sup>26</sup>	38·455 <sup>155</sup>	8·98 <sup>29</sup>	4·468 <sup>154</sup>	37·58 <sup>72</sup>
Feb. 9·3	6·004 <sup>178</sup>	7·33 <sup>34</sup>	38·300 <sup>174</sup>	8·69 <sup>35</sup>	4·314 <sup>171</sup>	38·30 <sup>49</sup>
19·2	5·826 <sup>188</sup>	6·99 <sup>41</sup>	38·126 <sup>185</sup>	8·34 <sup>38</sup>	4·143 <sup>180</sup>	38·79 <sup>27</sup>
Mar. 1·2	5·638 <sup>186</sup>	6·58 <sup>48</sup>	37·941 <sup>184</sup>	7·96 <sup>42</sup>	3·963 <sup>183</sup>	39·06 <sup>0</sup>
11·2	5·452 <sup>175</sup>	6·10 <sup>50</sup>	37·757 <sup>174</sup>	7·54 <sup>44</sup>	3·780 <sup>174</sup>	39·06 <sup>23</sup>
21·2	5·277 <sup>152</sup>	5·60 <sup>52</sup>	37·583 <sup>152</sup>	7·10 <sup>42</sup>	3·606 <sup>153</sup>	38·83 <sup>45</sup>
31·1	5·125 <sup>121</sup>	5·08 <sup>49</sup>	37·431 <sup>123</sup>	6·68 <sup>38</sup>	3·453 <sup>125</sup>	38·38 <sup>72</sup>
Apr. 10·1	5·004 <sup>80</sup>	4·59 <sup>44</sup>	37·308 <sup>83</sup>	6·30 <sup>31</sup>	3·328 <sup>89</sup>	37·66 <sup>95</sup>
20·1	4·924 <sup>37</sup>	4·15 <sup>34</sup>	37·225 <sup>40</sup>	5·99 <sup>20</sup>	3·239 <sup>53</sup>	36·71 <sup>117</sup>
30·1	4·887 <sup>12</sup>	3·81 <sup>22</sup>	37·185 <sup>8</sup>	5·79 <sup>9</sup>	3·186 <sup>7</sup>	35·54 <sup>139</sup>
May 10·0	4·899 <sup>62</sup>	3·59 <sup>7</sup>	37·193 <sup>55</sup>	5·70 <sup>7</sup>	3·179 <sup>35</sup>	34·15 <sup>157</sup>
20·0	4·961 <sup>109</sup>	3·52 <sup>9</sup>	37·248 <sup>104</sup>	5·77 <sup>23</sup>	3·214 <sup>82</sup>	32·58 <sup>175</sup>
30·0	5·070 <sup>156</sup>	3·61 <sup>26</sup>	37·352 <sup>148</sup>	6·00 <sup>39</sup>	3·296 <sup>125</sup>	30·83 <sup>186</sup>
June 8·9	5·226 <sup>197</sup>	3·87 <sup>44</sup>	37·500 <sup>190</sup>	6·39 <sup>55</sup>	3·421 <sup>162</sup>	28·97 <sup>192</sup>
18·9	5·423 <sup>232</sup>	4·31 <sup>59</sup>	37·690 <sup>224</sup>	6·94 <sup>71</sup>	3·583 <sup>200</sup>	27·05 <sup>198</sup>
28·9	5·655 <sup>262</sup>	4·90 <sup>74</sup>	37·914 <sup>255</sup>	7·65 <sup>82</sup>	3·783 <sup>226</sup>	25·07 <sup>195</sup>
July 8·9	5·917 <sup>284</sup>	5·64 <sup>86</sup>	38·169 <sup>278</sup>	8·47 <sup>93</sup>	4·009 <sup>252</sup>	23·12 <sup>188</sup>
18·8	6·201 <sup>300</sup>	6·50 <sup>95</sup>	38·447 <sup>293</sup>	9·40 <sup>100</sup>	4·261 <sup>270</sup>	21·24 <sup>175</sup>
28·8	6·501 <sup>309</sup>	7·45 <sup>100</sup>	38·740 <sup>304</sup>	10·40 <sup>103</sup>	4·531 <sup>279</sup>	19·49 <sup>156</sup>
Aug. 7·8	6·810 <sup>312</sup>	8·45 <sup>102</sup>	39·044 <sup>306</sup>	11·43 <sup>102</sup>	4·810 <sup>286</sup>	17·93 <sup>130</sup>
17·8	7·122 <sup>309</sup>	9·47 <sup>102</sup>	39·350 <sup>305</sup>	12·45 <sup>100</sup>	5·096 <sup>284</sup>	16·63 <sup>103</sup>
27·7	7·431 <sup>302</sup>	10·49 <sup>96</sup>	39·655 <sup>298</sup>	13·45 <sup>92</sup>	5·380 <sup>279</sup>	15·60 <sup>69</sup>
Sept. 6·7	7·733 <sup>289</sup>	11·45 <sup>91</sup>	39·953 <sup>286</sup>	14·37 <sup>84</sup>	5·659 <sup>267</sup>	14·91 <sup>37</sup>
16·7	8·022 <sup>275</sup>	12·36 <sup>82</sup>	40·239 <sup>273</sup>	15·21 <sup>73</sup>	5·926 <sup>256</sup>	14·54 <sup>0</sup>
26·6	8·297 <sup>255</sup>	13·18 <sup>72</sup>	40·512 <sup>254</sup>	15·94 <sup>60</sup>	6·182 <sup>237</sup>	14·54 <sup>34</sup>
Oct. 6·6	8·552 <sup>235</sup>	13·90 <sup>61</sup>	40·766 <sup>234</sup>	16·54 <sup>49</sup>	6·419 <sup>219</sup>	14·88 <sup>68</sup>
16·6	8·787 <sup>211</sup>	14·51 <sup>52</sup>	41·000 <sup>211</sup>	17·03 <sup>37</sup>	6·638 <sup>191</sup>	15·56 <sup>96</sup>
26·6	8·998 <sup>183</sup>	15·03 <sup>42</sup>	41·211 <sup>185</sup>	17·40 <sup>26</sup>	6·829 <sup>170</sup>	16·52 <sup>118</sup>
Nov. 5·5	9·181 <sup>155</sup>	15·45 <sup>34</sup>	41·396 <sup>156</sup>	17·66 <sup>18</sup>	6·999 <sup>137</sup>	17·70 <sup>138</sup>
15·5	9·336 <sup>121</sup>	15·79 <sup>27</sup>	41·552 <sup>124</sup>	17·84 <sup>9</sup>	7·136 <sup>107</sup>	19·08 <sup>149</sup>
25·5	9·457 <sup>85</sup>	16·06 <sup>20</sup>	41·676 <sup>89</sup>	17·93 <sup>4</sup>	7·243 <sup>72</sup>	20·57 <sup>155</sup>
Dec. 5·5	9·542 <sup>48</sup>	16·26 <sup>14</sup>	41·765 <sup>51</sup>	17·97 <sup>1</sup>	7·315 <sup>38</sup>	22·12 <sup>156</sup>
15·4	9·590 <sup>6</sup>	16·40 <sup>9</sup>	41·816 <sup>11</sup>	17·96 <sup>6</sup>	7·353 <sup>1</sup>	23·68 <sup>147</sup>
25·4	9·596 <sup>34</sup>	16·49 <sup>2</sup>	41·827 <sup>30</sup>	17·90 <sup>9</sup>	7·354 <sup>37</sup>	25·15 <sup>137</sup>
35·4	9·562	16·51	41·797	17·81	7·317	26·52
Mean Place	4·858	11·80	37·162	14·20	3·427	23·75
Sec δ, Tan δ	1·078	+0·401	1·060	+0·352	1·008	-0·123
L α, L δ	+0·01	+0·2	+0·01	+0·2	0·00	+0·2
ω α, ω δ	-0·01	+0·9	-0·01	+0·9	0·00	+0·9

AUTHORITY

A. E.

# APPARENT PLACES OF STARS, 1922. 303

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Horologii. Mag. 3.8		$\alpha$ Reticuli. Mag. 3.4		$\nu^1$ Eridani. Mag. 3.6	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 4 <sup>m</sup> II	<sup>°</sup> 42 <sup>'</sup> 28	<sup>h</sup> 4 <sup>m</sup> I3	<sup>°</sup> 62 <sup>'</sup> 39	<sup>h</sup> 4 <sup>m</sup> I4	<sup>°</sup> 33 <sup>'</sup> 59
Jan. 0.4	26.416 <sup>141</sup>	87.93 <sup>229</sup>	26.83 <sup>30</sup>	86.75 <sup>246</sup>	57.760 <sup>106</sup>	31.70 <sup>217</sup>
10.4	26.275 <sup>184</sup>	90.22 <sup>192</sup>	26.53 <sup>36</sup>	89.21 <sup>199</sup>	57.654 <sup>145</sup>	33.87 <sup>183</sup>
20.3	26.091 <sup>220</sup>	92.14 <sup>146</sup>	26.17 <sup>42</sup>	91.20 <sup>146</sup>	57.509 <sup>181</sup>	35.70 <sup>143</sup>
30.3	25.871 <sup>247</sup>	93.60 <sup>97</sup>	25.75 <sup>45</sup>	92.66 <sup>92</sup>	57.328 <sup>209</sup>	37.13 <sup>99</sup>
Feb. 9.3	25.624 <sup>268</sup>	94.57 <sup>50</sup>	25.30 <sup>48</sup>	93.58 <sup>35</sup>	57.119 <sup>227</sup>	38.12 <sup>55</sup>
19.2	25.356 <sup>278</sup>	95.07 <sup>2</sup>	24.82 <sup>49</sup>	93.93 <sup>23</sup>	56.892 <sup>240</sup>	38.67 <sup>9</sup>
Mar. 1.2	25.078 <sup>276</sup>	95.05 <sup>53</sup>	24.33 <sup>49</sup>	93.70 <sup>78</sup>	56.652 <sup>239</sup>	38.76 <sup>36</sup>
11.2	24.802 <sup>264</sup>	94.52 <sup>99</sup>	23.84 <sup>46</sup>	92.92 <sup>130</sup>	56.413 <sup>226</sup>	38.40 <sup>81</sup>
21.2	24.538 <sup>242</sup>	93.53 <sup>144</sup>	23.38 <sup>43</sup>	91.62 <sup>177</sup>	56.187 <sup>209</sup>	37.59 <sup>120</sup>
31.1	24.296 <sup>207</sup>	92.09 <sup>188</sup>	22.95 <sup>37</sup>	89.85 <sup>224</sup>	55.978 <sup>180</sup>	36.39 <sup>161</sup>
Apr. 10.1	24.089 <sup>167</sup>	90.21 <sup>223</sup>	22.58 <sup>32</sup>	87.61 <sup>262</sup>	55.798 <sup>141</sup>	34.78 <sup>197</sup>
20.1	23.922 <sup>118</sup>	87.98 <sup>256</sup>	22.26 <sup>25</sup>	84.99 <sup>295</sup>	55.657 <sup>98</sup>	32.81 <sup>227</sup>
30.1	23.804 <sup>66</sup>	85.42 <sup>282</sup>	22.01 <sup>17</sup>	82.04 <sup>322</sup>	55.559 <sup>50</sup>	30.54 <sup>255</sup>
May 10.0	23.738 <sup>9</sup>	82.60 <sup>303</sup>	21.84 <sup>8</sup>	78.82 <sup>342</sup>	55.509 <sup>1</sup>	27.99 <sup>275</sup>
20.0	23.729 <sup>45</sup>	79.57 <sup>318</sup>	21.76 <sup>1</sup>	75.40 <sup>351</sup>	55.510 <sup>52</sup>	25.24 <sup>290</sup>
30.0	23.774 <sup>102</sup>	76.39 <sup>324</sup>	21.75 <sup>8</sup>	71.89 <sup>354</sup>	55.562 <sup>102</sup>	22.34 <sup>299</sup>
June 8.9	23.876 <sup>153</sup>	73.15 <sup>321</sup>	21.83 <sup>17</sup>	68.35 <sup>348</sup>	55.664 <sup>150</sup>	19.35 <sup>301</sup>
18.9	24.029 <sup>203</sup>	69.94 <sup>312</sup>	22.00 <sup>24</sup>	64.87 <sup>333</sup>	55.814 <sup>192</sup>	16.34 <sup>295</sup>
28.9	24.232 <sup>244</sup>	66.82 <sup>294</sup>	22.24 <sup>32</sup>	61.54 <sup>311</sup>	56.006 <sup>230</sup>	13.39 <sup>279</sup>
July 8.9	24.476 <sup>281</sup>	63.88 <sup>267</sup>	22.56 <sup>38</sup>	58.43 <sup>277</sup>	56.236 <sup>261</sup>	10.60 <sup>256</sup>
18.8	24.757 <sup>309</sup>	61.21 <sup>232</sup>	22.94 <sup>43</sup>	55.66 <sup>235</sup>	56.497 <sup>286</sup>	8.04 <sup>226</sup>
28.8	25.066 <sup>330</sup>	58.89 <sup>189</sup>	23.37 <sup>47</sup>	53.31 <sup>189</sup>	56.783 <sup>304</sup>	5.78 <sup>189</sup>
Aug. 7.8	25.396 <sup>345</sup>	57.00 <sup>144</sup>	23.84 <sup>49</sup>	51.42 <sup>133</sup>	57.087 <sup>316</sup>	3.89 <sup>147</sup>
17.8	25.741 <sup>347</sup>	55.56 <sup>88</sup>	24.33 <sup>52</sup>	50.09 <sup>73</sup>	57.403 <sup>317</sup>	2.42 <sup>96</sup>
27.7	26.088 <sup>343</sup>	54.68 <sup>32</sup>	24.85 <sup>51</sup>	49.36 <sup>12</sup>	57.720 <sup>313</sup>	1.46 <sup>45</sup>
Sept. 6.7	26.431 <sup>333</sup>	54.36 <sup>27</sup>	25.36 <sup>50</sup>	49.24 <sup>53</sup>	58.033 <sup>306</sup>	1.01 <sup>9</sup>
16.7	26.764 <sup>315</sup>	54.63 <sup>85</sup>	25.86 <sup>46</sup>	49.77 <sup>114</sup>	58.339 <sup>290</sup>	1.10 <sup>63</sup>
26.6	27.079 <sup>290</sup>	55.48 <sup>139</sup>	26.32 <sup>43</sup>	50.91 <sup>174</sup>	58.629 <sup>267</sup>	1.73 <sup>116</sup>
Oct. 6.6	27.369 <sup>259</sup>	56.87 <sup>191</sup>	26.75 <sup>38</sup>	52.65 <sup>228</sup>	58.896 <sup>243</sup>	2.89 <sup>165</sup>
16.6	27.628 <sup>224</sup>	58.78 <sup>234</sup>	27.13 <sup>31</sup>	54.93 <sup>272</sup>	59.139 <sup>213</sup>	4.54 <sup>205</sup>
26.6	27.852 <sup>182</sup>	61.12 <sup>267</sup>	27.44 <sup>24</sup>	57.65 <sup>306</sup>	59.352 <sup>177</sup>	6.59 <sup>239</sup>
Nov. 5.5	28.034 <sup>137</sup>	63.79 <sup>293</sup>	27.68 <sup>17</sup>	60.71 <sup>332</sup>	59.529 <sup>140</sup>	8.98 <sup>263</sup>
15.5	28.171 <sup>89</sup>	66.72 <sup>305</sup>	27.85 <sup>7</sup>	64.03 <sup>344</sup>	59.669 <sup>99</sup>	11.61 <sup>279</sup>
25.5	28.260 <sup>40</sup>	69.77 <sup>309</sup>	27.92 <sup>0</sup>	67.47 <sup>342</sup>	59.768 <sup>55</sup>	14.40 <sup>281</sup>
Dec. 5.5	28.300 <sup>11</sup>	72.86 <sup>299</sup>	27.92 <sup>10</sup>	70.89 <sup>328</sup>	59.823 <sup>12</sup>	17.21 <sup>276</sup>
15.4	28.289 <sup>63</sup>	75.85 <sup>280</sup>	27.82 <sup>18</sup>	74.17 <sup>305</sup>	59.835 <sup>35</sup>	19.97 <sup>259</sup>
25.4	28.226 <sup>110</sup>	78.65 <sup>251</sup>	27.64 <sup>25</sup>	77.22 <sup>270</sup>	59.800 <sup>79</sup>	22.56 <sup>235</sup>
35.4	28.116	81.16	27.39	79.92	59.721	24.91
Mean Place	25.009	71.09	24.90	67.82	56.402	16.20
Sec $\delta$ , Tan $\delta$	1.356	-0.916	2.178	-1.935	1.206	-0.674
L $\alpha$ , L $\delta$	-0.02	+0.2	-0.05	+0.2	-0.02	+0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.03	+0.9	+0.06	+0.9	+0.02	+0.9
AUTHORITY	A. E.		A. E.		A. E.	

# 304 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\gamma$ Tauri. Mag. 3.9		$\epsilon$ Tauri. Mag. 3.6		$\alpha$ Tauri. Mag. 1.1	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 4 15	<sup>°</sup> <sup>'</sup> 15 26	<sup>h</sup> <sup>m</sup> 4 24	<sup>°</sup> <sup>'</sup> 19 0	<sup>h</sup> <sup>m</sup> 4 31	<sup>°</sup> <sup>'</sup> 16 21
Jan.	0.4 22.664 <sub>45</sub>	19.19 <sub>33</sub>	5.206 <sub>36</sub>	25.36 <sub>14</sub>	28.158 <sub>32</sub>	6.68 <sub>28</sub>
	10.4 22.619 <sub>84</sub>	18.86 <sub>33</sub>	5.170 <sub>82</sub>	25.22 <sub>18</sub>	28.126 <sub>75</sub>	6.40 <sub>28</sub>
	20.4 22.535 <sub>119</sub>	18.53 <sub>34</sub>	5.088 <sub>118</sub>	25.04 <sub>19</sub>	28.051 <sub>111</sub>	6.11 <sub>29</sub>
	30.3 22.416 <sub>148</sub>	18.19 <sub>34</sub>	4.970 <sub>148</sub>	24.85 <sub>24</sub>	27.940 <sub>143</sub>	5.82 <sub>27</sub>
Feb.	9.3 22.268 <sub>169</sub>	17.85 <sub>34</sub>	4.822 <sub>172</sub>	24.61 <sub>28</sub>	27.797 <sub>166</sub>	5.55 <sub>29</sub>
	19.3 22.099 <sub>181</sub>	17.51 <sub>35</sub>	4.650 <sub>184</sub>	24.33 <sub>32</sub>	27.631 <sub>182</sub>	5.26 <sub>31</sub>
Mar.	1.2 21.918 <sub>183</sub>	17.16 <sub>33</sub>	4.466 <sub>187</sub>	24.01 <sub>35</sub>	27.449 <sub>188</sub>	4.95 <sub>31</sub>
	11.2 21.735 <sub>174</sub>	16.83 <sub>31</sub>	4.279 <sub>180</sub>	23.66 <sub>36</sub>	27.261 <sub>180</sub>	4.64 <sub>29</sub>
	21.2 21.561 <sub>156</sub>	16.52 <sub>27</sub>	4.099 <sub>162</sub>	23.30 <sub>34</sub>	27.081 <sub>164</sub>	4.35 <sub>26</sub>
	31.2 21.405 <sub>127</sub>	16.25 <sub>20</sub>	3.937 <sub>137</sub>	22.96 <sub>31</sub>	26.917 <sub>137</sub>	4.09 <sub>22</sub>
Apr.	10.1 21.278 <sub>91</sub>	16.05 <sub>11</sub>	3.800 <sub>97</sub>	22.65 <sub>26</sub>	26.780 <sub>104</sub>	3.87 <sub>13</sub>
	20.1 21.187 <sub>49</sub>	15.94 <sub>1</sub>	3.703 <sub>55</sub>	22.39 <sub>18</sub>	26.676 <sub>62</sub>	3.74 <sub>3</sub>
	30.1 21.138 <sub>4</sub>	15.95 <sub>14</sub>	3.648 <sub>12</sub>	22.21 <sub>6</sub>	26.614 <sub>20</sub>	3.71 <sub>8</sub>
May	10.1 21.134 <sub>44</sub>	16.09 <sub>28</sub>	3.636 <sub>36</sub>	22.15 <sub>7</sub>	26.594 <sub>29</sub>	3.79 <sub>20</sub>
	20.0 21.178 <sub>90</sub>	16.37 <sub>44</sub>	3.672 <sub>84</sub>	22.22 <sub>20</sub>	26.623 <sub>76</sub>	3.99 <sub>36</sub>
	30.0 21.268 <sub>135</sub>	16.81 <sub>59</sub>	3.756 <sub>130</sub>	22.42 <sub>37</sub>	26.699 <sub>121</sub>	4.35 <sub>47</sub>
June	9.0 21.403 <sub>176</sub>	17.40 <sub>74</sub>	3.886 <sub>170</sub>	22.79 <sub>48</sub>	26.820 <sub>160</sub>	4.82 <sub>63</sub>
	18.9 21.579 <sub>211</sub>	18.14 <sub>86</sub>	4.056 <sub>210</sub>	23.27 <sub>65</sub>	26.980 <sub>201</sub>	5.45 <sub>72</sub>
	28.9 21.790 <sub>241</sub>	19.00 <sub>95</sub>	4.266 <sub>239</sub>	23.92 <sub>72</sub>	27.181 <sub>229</sub>	6.17 <sub>82</sub>
July	8.9 22.031 <sub>266</sub>	19.95 <sub>103</sub>	4.505 <sub>265</sub>	24.64 <sub>84</sub>	27.410 <sub>256</sub>	6.99 <sub>92</sub>
	18.9 22.297 <sub>282</sub>	20.98 <sub>107</sub>	4.770 <sub>284</sub>	25.48 <sub>87</sub>	27.666 <sub>276</sub>	7.91 <sub>93</sub>
	28.8 22.579 <sub>293</sub>	22.05 <sub>107</sub>	5.054 <sub>296</sub>	26.35 <sub>94</sub>	27.942 <sub>290</sub>	8.84 <sub>96</sub>
Aug.	7.8 22.872 <sub>299</sub>	23.12 <sub>102</sub>	5.350 <sub>299</sub>	27.29 <sub>90</sub>	28.232 <sub>293</sub>	9.80 <sub>93</sub>
	17.8 23.171 <sub>298</sub>	24.14 <sub>95</sub>	5.649 <sub>305</sub>	28.19 <sub>89</sub>	28.525 <sub>299</sub>	10.73 <sub>84</sub>
	27.7 23.469 <sub>293</sub>	25.09 <sub>85</sub>	5.954 <sub>304</sub>	29.08 <sub>82</sub>	28.824 <sub>300</sub>	11.57 <sub>77</sub>
Sept.	6.7 23.762 <sub>284</sub>	25.94 <sub>72</sub>	6.258 <sub>292</sub>	29.90 <sub>70</sub>	29.124 <sub>290</sub>	12.34 <sub>64</sub>
	16.7 24.046 <sub>271</sub>	26.66 <sub>57</sub>	6.550 <sub>281</sub>	30.60 <sub>60</sub>	29.414 <sub>280</sub>	12.98 <sub>49</sub>
	26.7 24.317 <sub>256</sub>	27.23 <sub>41</sub>	6.831 <sub>266</sub>	31.20 <sub>50</sub>	29.694 <sub>265</sub>	13.47 <sub>36</sub>
Oct.	6.6 24.573 <sub>236</sub>	27.64 <sub>26</sub>	7.097 <sub>250</sub>	31.70 <sub>37</sub>	29.959 <sub>251</sub>	13.83 <sub>24</sub>
	16.6 24.809 <sub>215</sub>	27.90 <sub>13</sub>	7.347 <sub>226</sub>	32.07 <sub>25</sub>	30.210 <sub>228</sub>	14.07 <sub>10</sub>
	26.6 25.024 <sub>190</sub>	28.03 <sub>0</sub>	7.573 <sub>203</sub>	32.32 <sub>16</sub>	30.438 <sub>206</sub>	14.17 <sub>5</sub>
Nov.	5.6 25.214 <sub>162</sub>	28.03 <sub>11</sub>	7.776 <sub>175</sub>	32.48 <sub>9</sub>	30.644 <sub>178</sub>	14.12 <sub>10</sub>
	15.5 25.376 <sub>131</sub>	27.92 <sub>18</sub>	7.951 <sub>142</sub>	32.57 <sub>1</sub>	30.822 <sub>148</sub>	14.02 <sub>17</sub>
	25.5 25.507 <sub>98</sub>	27.74 <sub>23</sub>	8.093 <sub>110</sub>	32.58 <sub>4</sub>	30.970 <sub>115</sub>	13.85 <sub>22</sub>
Dec.	5.5 25.605 <sub>59</sub>	27.51 <sub>27</sub>	8.203 <sub>68</sub>	32.54 <sub>6</sub>	31.085 <sub>74</sub>	13.63 <sub>25</sub>
	15.4 25.664 <sub>20</sub>	27.24 <sub>29</sub>	8.271 <sub>31</sub>	32.48 <sub>9</sub>	31.159 <sub>37</sub>	13.38 <sub>26</sub>
	25.4 25.684 <sub>20</sub>	26.95 <sub>30</sub>	8.302 <sub>13</sub>	32.39 <sub>11</sub>	31.196 <sub>8</sub>	13.12 <sub>27</sub>
	35.4 25.664	26.65	8.289	32.28	31.188	12.85
Mean Place	21.121	25.17	3.592	31.06	26.560	13.19
Sec $\delta$ , Tan $\delta$	1.037	+0.276	1.058	+0.344	1.042	+0.293
L $\alpha$ , L $\delta$	+0.01	+0.2	+0.01	+0.2	+0.01	+0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+0.9	-0.01	+0.9	-0.01	+0.9
AUTHORITY	A. N.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 305

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		α Doradus. Mag. 3·5		53 Eridani. Mag. 4·0		τ Tauri. Mag. 4·3	
		R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
		h m 4 32	° ′ 55 12	h m 4 34	° ′ 14 27	h m 4 37	° ′ 22 48
Jan.	0·4	20·408 <sup>197</sup>	39·06 <sup>266</sup>	37·779 <sup>50</sup>	31·80 <sup>171</sup>	35·394 <sup>27</sup>	24·92 <sup>6</sup>
	10·4	20·211 <sup>253</sup>	41·72 <sup>221</sup>	37·729 <sup>91</sup>	33·51 <sup>148</sup>	35·367 <sup>75</sup>	24·98 <sup>1</sup>
	20·4	19·958 <sup>301</sup>	43·93 <sup>174</sup>	37·638 <sup>123</sup>	34·99 <sup>123</sup>	35·292 <sup>112</sup>	24·99 <sup>4</sup>
	30·3	19·657 <sup>342</sup>	45·67 <sup>122</sup>	37·515 <sup>153</sup>	36·22 <sup>94</sup>	35·180 <sup>146</sup>	24·95 <sup>10</sup>
Feb.	9·3	19·315 <sup>369</sup>	46·89 <sup>66</sup>	37·362 <sup>178</sup>	37·16 <sup>64</sup>	35·034 <sup>172</sup>	24·85 <sup>16</sup>
	19·3	18·946 <sup>384</sup>	47·55 <sup>12</sup>	37·184 <sup>192</sup>	37·80 <sup>3</sup>	34·862 <sup>190</sup>	24·69 <sup>24</sup>
Mar.	1·3	18·562 <sup>385</sup>	47·67 <sup>43</sup>	36·992 <sup>195</sup>	38·15 <sup>35</sup>	34·672 <sup>195</sup>	24·45 <sup>31</sup>
	11·2	18·177 <sup>373</sup>	47·24 <sup>93</sup>	36·797 <sup>190</sup>	38·18 <sup>26</sup>	34·477 <sup>191</sup>	24·14 <sup>36</sup>
	21·2	17·804 <sup>348</sup>	46·31 <sup>144</sup>	36·607 <sup>175</sup>	37·92 <sup>59</sup>	34·286 <sup>173</sup>	23·78 <sup>42</sup>
	31·2	17·456 <sup>313</sup>	44·87 <sup>191</sup>	36·432 <sup>152</sup>	37·33 <sup>87</sup>	34·113 <sup>144</sup>	23·36 <sup>43</sup>
Apr.	10·1	17·143 <sup>266</sup>	42·96 <sup>233</sup>	36·280 <sup>119</sup>	36·46 <sup>115</sup>	33·969 <sup>114</sup>	22·93 <sup>37</sup>
	20·1	16·877 <sup>209</sup>	40·63 <sup>266</sup>	36·161 <sup>81</sup>	35·31 <sup>141</sup>	33·855 <sup>69</sup>	22·56 <sup>34</sup>
	30·1	16·668 <sup>148</sup>	37·97 <sup>298</sup>	36·080 <sup>40</sup>	33·90 <sup>165</sup>	33·786 <sup>25</sup>	22·22 <sup>29</sup>
May	10·1	16·520 <sup>79</sup>	34·99 <sup>322</sup>	36·040 <sup>5</sup>	32·25 <sup>187</sup>	33·761 <sup>26</sup>	21·93 <sup>16</sup>
	20·0	16·441 <sup>13</sup>	31·77 <sup>337</sup>	36·045 <sup>52</sup>	30·38 <sup>202</sup>	33·787 <sup>72</sup>	21·77 <sup>4</sup>
	30·0	16·428 <sup>60</sup>	28·40 <sup>346</sup>	36·097 <sup>96</sup>	28·36 <sup>215</sup>	33·859 <sup>121</sup>	21·73 <sup>9</sup>
June	9·0	16·488 <sup>127</sup>	24·94 <sup>343</sup>	36·193 <sup>135</sup>	26·21 <sup>224</sup>	33·980 <sup>162</sup>	21·82 <sup>21</sup>
	19·0	16·615 <sup>191</sup>	21·51 <sup>335</sup>	36·328 <sup>173</sup>	23·97 <sup>225</sup>	34·142 <sup>204</sup>	22·03 <sup>37</sup>
	28·9	16·806 <sup>249</sup>	18·16 <sup>315</sup>	36·501 <sup>207</sup>	21·72 <sup>220</sup>	34·346 <sup>234</sup>	22·40 <sup>49</sup>
July	8·9	17·055 <sup>303</sup>	15·01 <sup>288</sup>	36·708 <sup>234</sup>	19·52 <sup>210</sup>	34·580 <sup>263</sup>	22·89 <sup>59</sup>
	18·9	17·358 <sup>346</sup>	12·13 <sup>254</sup>	36·942 <sup>255</sup>	17·42 <sup>194</sup>	34·843 <sup>285</sup>	23·48 <sup>69</sup>
	28·8	17·704 <sup>382</sup>	9·59 <sup>208</sup>	37·197 <sup>271</sup>	15·48 <sup>170</sup>	35·128 <sup>296</sup>	24·17 <sup>70</sup>
Aug.	7·8	18·086 <sup>405</sup>	7·51 <sup>158</sup>	37·468 <sup>280</sup>	13·78 <sup>141</sup>	35·424 <sup>306</sup>	24·87 <sup>77</sup>
	17·8	18·491 <sup>422</sup>	5·93 <sup>102</sup>	37·748 <sup>285</sup>	12·37 <sup>108</sup>	35·730 <sup>311</sup>	25·64 <sup>74</sup>
	27·8	18·913 <sup>426</sup>	4·91 <sup>40</sup>	38·033 <sup>285</sup>	11·29 <sup>67</sup>	36·041 <sup>308</sup>	26·38 <sup>73</sup>
Sept.	6·7	19·339 <sup>419</sup>	4·51 <sup>22</sup>	38·318 <sup>277</sup>	10·62 <sup>29</sup>	36·349 <sup>306</sup>	27·11 <sup>65</sup>
	16·7	19·758 <sup>402</sup>	4·73 <sup>86</sup>	38·595 <sup>268</sup>	10·33 <sup>13</sup>	36·655 <sup>294</sup>	27·76 <sup>61</sup>
	26·7	20·160 <sup>373</sup>	5·59 <sup>145</sup>	38·863 <sup>254</sup>	10·46 <sup>56</sup>	36·949 <sup>280</sup>	28·37 <sup>52</sup>
Oct.	6·7	20·533 <sup>337</sup>	7·04 <sup>203</sup>	39·117 <sup>236</sup>	11·02 <sup>95</sup>	37·229 <sup>267</sup>	28·89 <sup>42</sup>
	16·6	20·870 <sup>293</sup>	9·07 <sup>249</sup>	39·353 <sup>214</sup>	11·97 <sup>127</sup>	37·496 <sup>244</sup>	29·31 <sup>36</sup>
	26·6	21·163 <sup>240</sup>	11·56 <sup>289</sup>	39·567 <sup>188</sup>	13·24 <sup>157</sup>	37·740 <sup>221</sup>	29·67 <sup>31</sup>
Nov.	5·6	21·403 <sup>179</sup>	14·45 <sup>316</sup>	39·755 <sup>162</sup>	14·81 <sup>180</sup>	37·961 <sup>191</sup>	29·98 <sup>26</sup>
	15·5	21·582 <sup>116</sup>	17·61 <sup>336</sup>	39·917 <sup>130</sup>	16·61 <sup>195</sup>	38·152 <sup>161</sup>	30·24 <sup>20</sup>
	25·5	21·698 <sup>47</sup>	20·97 <sup>341</sup>	40·047 <sup>93</sup>	18·56 <sup>203</sup>	38·313 <sup>127</sup>	30·44 <sup>17</sup>
Dec.	5·5	21·745 <sup>21</sup>	24·38 <sup>331</sup>	40·140 <sup>55</sup>	20·59 <sup>201</sup>	38·440 <sup>85</sup>	30·61 <sup>14</sup>
	15·5	21·724 <sup>90</sup>	27·69 <sup>315</sup>	40·195 <sup>16</sup>	22·60 <sup>194</sup>	38·525 <sup>45</sup>	30·75 <sup>12</sup>
	25·4	21·634 <sup>157</sup>	30·84 <sup>285</sup>	40·211 <sup>25</sup>	24·54 <sup>181</sup>	38·570 <sup>3</sup>	30·87 <sup>11</sup>
	35·4	21·477	33·69	40·186	26·35	38·567	30·98
Mean Place		18·584	21·48	36·375	19·65	33·688	30·58
Sec δ, Tan δ		1·752	—1·439	1·033	—0·258	1·085	+0·421
L α, L δ		—0·03	+0·1	—0·01	+0·1	+0·01	+0·1
ω α, ω δ		+0·03	+0·9	+0·01	+0·9	—0·01	+0·9
AUTHORITY		A. E.		A. E.		A. E.	

# 306 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\mu$ Eridani. Mag. 4.2		$\pi^3$ Orionis. Mag. 3.3		$\epsilon$ Aurigæ. Mag. 2.9		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.	
	<sup>h</sup> 4 <sup>m</sup> 41	<sup>°</sup> 3 <sup>'</sup> 23	<sup>h</sup> 4 <sup>m</sup> 45	<sup>°</sup> 6 <sup>'</sup> 49	<sup>h</sup> 4 <sup>m</sup> 51	<sup>°</sup> 33 <sup>'</sup> 2	
Jan.	0.4 10.4 20.4 30.3	37.541 <sup>33</sup> 37.508 <sup>72</sup> 37.436 <sup>108</sup> 37.328 <sup>140</sup>	58.20 <sup>126</sup> 59.46 <sup>111</sup> 60.57 <sup>94</sup> 61.51 <sup>75</sup>	37.792 <sup>22</sup> 37.770 <sup>63</sup> 37.707 <sup>101</sup> 37.606 <sup>134</sup>	26.15 <sup>78</sup> 25.37 <sup>69</sup> 24.68 <sup>61</sup> 24.07 <sup>51</sup>	56.613 <sup>20</sup> 56.593 <sup>70</sup> 56.523 <sup>117</sup> 56.406 <sup>154</sup>	33.31 <sup>64</sup> 33.95 <sup>52</sup> 34.47 <sup>41</sup> 34.88 <sup>30</sup>
Feb.	9.3 19.3	37.188 <sup>163</sup> 37.025 <sup>180</sup>	62.26 <sup>56</sup> 62.82 <sup>36</sup>	37.472 <sup>159</sup> 37.313 <sup>176</sup>	23.56 <sup>41</sup> 23.15 <sup>31</sup>	56.252 <sup>189</sup> 56.063 <sup>208</sup>	35.18 <sup>9</sup> 35.27 <sup>6</sup>
Mar.	1.3 11.2 21.2 31.2	36.845 <sup>185</sup> 36.660 <sup>182</sup> 36.478 <sup>167</sup> 36.311 <sup>145</sup>	63.18 <sup>15</sup> 63.33 <sup>7</sup> 63.26 <sup>27</sup> 62.99 <sup>48</sup>	37.137 <sup>182</sup> 36.955 <sup>180</sup> 36.775 <sup>167</sup> 36.608 <sup>142</sup>	22.84 <sup>21</sup> 22.63 <sup>11</sup> 22.52 <sup>2</sup> 22.54 <sup>14</sup>	55.855 <sup>215</sup> 55.640 <sup>214</sup> 55.426 <sup>197</sup> 55.229 <sup>173</sup>	35.21 <sup>26</sup> 34.95 <sup>43</sup> 34.52 <sup>55</sup> 33.97 <sup>67</sup>
Apr.	10.2 20.1	36.166 <sup>113</sup> 36.053 <sup>77</sup>	62.51 <sup>70</sup> 61.81 <sup>90</sup>	36.466 <sup>112</sup> 36.354 <sup>74</sup>	22.68 <sup>28</sup> 22.96 <sup>42</sup>	55.056 <sup>133</sup> 54.923 <sup>92</sup>	33.30 <sup>77</sup> 32.53 <sup>79</sup>
May	30.1 10.1 20.0 30.0	35.976 <sup>35</sup> 35.941 <sup>8</sup> 35.949 <sup>54</sup> 36.003 <sup>96</sup>	60.91 <sup>110</sup> 59.81 <sup>128</sup> 58.53 <sup>146</sup> 57.07 <sup>158</sup>	36.280 <sup>32</sup> 36.248 <sup>13</sup> 36.261 <sup>57</sup> 36.318 <sup>100</sup>	23.38 <sup>57</sup> 23.95 <sup>73</sup> 24.68 <sup>87</sup> 25.55 <sup>101</sup>	54.831 <sup>40</sup> 54.791 <sup>9</sup> 54.800 <sup>65</sup> 54.865 <sup>116</sup>	31.74 <sup>79</sup> 30.95 <sup>73</sup> 30.22 <sup>66</sup> 29.56 <sup>56</sup>
June	9.0 19.0 28.9	36.099 <sup>137</sup> 36.236 <sup>173</sup> 36.409 <sup>205</sup>	55.49 <sup>168</sup> 53.81 <sup>174</sup> 52.07 <sup>175</sup>	36.418 <sup>142</sup> 36.560 <sup>178</sup> 36.738 <sup>210</sup>	26.56 <sup>112</sup> 27.68 <sup>120</sup> 28.88 <sup>126</sup>	54.981 <sup>161</sup> 55.142 <sup>208</sup> 55.350 <sup>241</sup>	29.00 <sup>42</sup> 28.58 <sup>28</sup> 28.30 <sup>13</sup>
July	8.9 18.9 28.9	36.614 <sup>232</sup> 36.846 <sup>252</sup> 37.098 <sup>267</sup>	50.32 <sup>170</sup> 48.62 <sup>161</sup> 47.01 <sup>146</sup>	36.948 <sup>237</sup> 37.185 <sup>257</sup> 37.442 <sup>273</sup>	30.14 <sup>127</sup> 31.41 <sup>125</sup> 32.66 <sup>117</sup>	55.591 <sup>277</sup> 55.868 <sup>297</sup> 56.165 <sup>320</sup>	28.17 <sup>2</sup> 28.19 <sup>16</sup> 28.35 <sup>30</sup>
Aug.	7.8 17.8	37.365 <sup>277</sup> 37.642 <sup>281</sup>	45.55 <sup>125</sup> 44.30 <sup>101</sup>	37.715 <sup>281</sup> 37.996 <sup>287</sup>	33.83 <sup>105</sup> 34.88 <sup>91</sup>	56.485 <sup>331</sup> 56.816 <sup>338</sup>	28.65 <sup>38</sup> 29.03 <sup>48</sup>
Sept.	27.8 6.7 16.7 26.7	37.923 <sup>281</sup> 38.204 <sup>275</sup> 38.479 <sup>267</sup> 38.746 <sup>255</sup>	43.29 <sup>73</sup> 42.56 <sup>41</sup> 42.15 <sup>9</sup> 42.06 <sup>24</sup>	38.283 <sup>286</sup> 38.569 <sup>281</sup> 38.850 <sup>274</sup> 39.124 <sup>262</sup>	35.79 <sup>70</sup> 36.49 <sup>50</sup> 36.99 <sup>27</sup> 37.26 <sup>4</sup>	57.154 <sup>338</sup> 57.492 <sup>334</sup> 57.826 <sup>327</sup> 58.153 <sup>318</sup>	29.51 <sup>57</sup> 30.08 <sup>60</sup> 30.68 <sup>64</sup> 31.32 <sup>67</sup>
Oct.	6.7 16.6 26.6	39.001 <sup>239</sup> 39.240 <sup>220</sup> 39.460 <sup>198</sup>	42.30 <sup>55</sup> 42.85 <sup>82</sup> 43.67 <sup>106</sup>	39.386 <sup>248</sup> 39.634 <sup>230</sup> 39.864 <sup>208</sup>	37.30 <sup>19</sup> 37.11 <sup>39</sup> 36.72 <sup>56</sup>	58.471 <sup>300</sup> 58.771 <sup>280</sup> 59.051 <sup>255</sup>	31.99 <sup>68</sup> 32.67 <sup>70</sup> 33.37 <sup>71</sup>
Nov.	5.6 15.6 25.5	39.658 <sup>172</sup> 39.830 <sup>142</sup> 39.972 <sup>109</sup>	44.73 <sup>125</sup> 45.98 <sup>138</sup> 47.36 <sup>144</sup>	40.072 <sup>184</sup> 40.256 <sup>154</sup> 40.410 <sup>121</sup>	36.16 <sup>71</sup> 35.45 <sup>79</sup> 34.66 <sup>85</sup>	59.306 <sup>228</sup> 59.534 <sup>191</sup> 59.725 <sup>153</sup>	34.08 <sup>74</sup> 34.82 <sup>76</sup> 35.58 <sup>76</sup>
Dec.	5.5 15.5 25.4 35.4	40.081 <sup>72</sup> 40.153 <sup>33</sup> 40.186 <sup>7</sup> 40.179	48.80 <sup>144</sup> 50.24 <sup>141</sup> 51.65 <sup>131</sup> 52.96	40.531 <sup>86</sup> 40.617 <sup>44</sup> 40.661 <sup>3</sup> 40.664	33.81 <sup>87</sup> 32.94 <sup>84</sup> 32.10 <sup>79</sup> 31.31	59.878 <sup>111</sup> 59.989 <sup>60</sup> 60.049 <sup>11</sup> 60.060	36.34 <sup>75</sup> 37.09 <sup>73</sup> 37.82 <sup>69</sup> 38.51
Mean Place	36.083	47.84	36.259	34.88	54.678	38.20	
Sec $\delta$ , Tan $\delta$	1.002	-0.059	1.007	+0.120	1.193	+0.650	
L $\alpha$ , L $\delta$	0.00	+0.1	0.00	+0.1	+0.02	+0.1	
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+0.9	0.00	+0.9	-0.01	+1.0	
AUTHORITY	A. N.				A. E.		



# APPARENT PLACES OF STARS, 1922. 307

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		ε Aurigæ. Mag. 3·4—4·1		η Aurigæ. Mag. 3·3		ε Leporis. Mag. 3·3	
		R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
		<sup>h</sup> <sup>m</sup> 4 56	<sup>°</sup> <sup>'</sup> 43 42	<sup>h</sup> <sup>m</sup> 5 I	<sup>°</sup> <sup>'</sup> 41 7	<sup>h</sup> <sup>m</sup> 5 2	<sup>°</sup> <sup>'</sup> 22 28
Jan.	0·4	24·398 <sup>25</sup>	29·81 <sup>122</sup>	4·729 <sup>17</sup>	45·11 <sup>108</sup>	11·023 <sup>40</sup>	42·67 <sup>214</sup>
	10·4	24·373 <sup>85</sup>	31·03 <sup>106</sup>	4·712 <sup>74</sup>	46·19 <sup>96</sup>	10·983 <sup>84</sup>	44·81 <sup>190</sup>
	20·4	24·288 <sup>137</sup>	32·09 <sup>88</sup>	4·638 <sup>125</sup>	47·15 <sup>80</sup>	10·899 <sup>123</sup>	46·71 <sup>160</sup>
	30·3	24·151 <sup>185</sup>	32·97 <sup>63</sup>	4·513 <sup>172</sup>	47·95 <sup>58</sup>	10·776 <sup>156</sup>	48·31 <sup>126</sup>
Feb.	9·3	23·966 <sup>220</sup>	33·60 <sup>37</sup>	4·341 <sup>209</sup>	48·53 <sup>36</sup>	10·620 <sup>186</sup>	49·57 <sup>89</sup>
	19·3	23·746 <sup>247</sup>	33·97 <sup>10</sup>	4·132 <sup>234</sup>	48·89 <sup>9</sup>	10·434 <sup>204</sup>	50·46 <sup>51</sup>
Mar.	1·3	23·499 <sup>256</sup>	34·07 <sup>20</sup>	3·898 <sup>244</sup>	48·98 <sup>15</sup>	10·230 <sup>212</sup>	50·97 <sup>16</sup>
	11·2	23·243 <sup>253</sup>	33·87 <sup>48</sup>	3·654 <sup>243</sup>	48·83 <sup>43</sup>	10·018 <sup>212</sup>	51·13 <sup>22</sup>
	21·2	22·990 <sup>234</sup>	33·39 <sup>74</sup>	3·411 <sup>225</sup>	48·40 <sup>65</sup>	9·806 <sup>202</sup>	50·91 <sup>59</sup>
	31·2	22·756 <sup>205</sup>	32·65 <sup>95</sup>	3·186 <sup>199</sup>	47·75 <sup>85</sup>	9·604 <sup>179</sup>	50·32 <sup>95</sup>
Apr.	10·2	22·551 <sup>165</sup>	31·70 <sup>111</sup>	2·987 <sup>160</sup>	46·90 <sup>101</sup>	9·425 <sup>151</sup>	49·37 <sup>127</sup>
	20·1	22·386 <sup>114</sup>	30·59 <sup>124</sup>	2·827 <sup>114</sup>	45·89 <sup>110</sup>	9·274 <sup>115</sup>	48·10 <sup>160</sup>
	30·1	22·272 <sup>58</sup>	29·35 <sup>129</sup>	2·713 <sup>58</sup>	44·79 <sup>116</sup>	9·159 <sup>74</sup>	46·50 <sup>186</sup>
May	10·1	22·214 <sup>2</sup>	28·06 <sup>130</sup>	2·655 <sup>4</sup>	43·63 <sup>117</sup>	9·085 <sup>30</sup>	44·64 <sup>211</sup>
	20·0	22·216 <sup>63</sup>	26·76 <sup>127</sup>	2·651 <sup>57</sup>	42·46 <sup>113</sup>	9·055 <sup>17</sup>	42·53 <sup>230</sup>
	30·0	22·279 <sup>120</sup>	25·49 <sup>118</sup>	2·708 <sup>113</sup>	41·33 <sup>105</sup>	9·072 <sup>62</sup>	40·23 <sup>245</sup>
June	9·0	22·399 <sup>179</sup>	24·31 <sup>105</sup>	2·821 <sup>166</sup>	40·28 <sup>92</sup>	9·134 <sup>105</sup>	37·78 <sup>252</sup>
	19·0	22·578 <sup>226</sup>	23·26 <sup>87</sup>	2·987 <sup>216</sup>	39·36 <sup>78</sup>	9·239 <sup>145</sup>	35·26 <sup>256</sup>
	28·9	22·804 <sup>271</sup>	22·39 <sup>71</sup>	3·203 <sup>256</sup>	38·58 <sup>60</sup>	9·384 <sup>183</sup>	32·70 <sup>249</sup>
July	8·9	23·075 <sup>307</sup>	21·68 <sup>51</sup>	3·459 <sup>293</sup>	37·98 <sup>43</sup>	9·567 <sup>215</sup>	30·21 <sup>238</sup>
	18·9	23·382 <sup>339</sup>	21·17 <sup>32</sup>	3·752 <sup>324</sup>	37·55 <sup>26</sup>	9·782 <sup>241</sup>	27·83 <sup>218</sup>
	28·9	23·721 <sup>359</sup>	20·85 <sup>11</sup>	4·076 <sup>345</sup>	37·29 <sup>6</sup>	10·023 <sup>261</sup>	25·65 <sup>193</sup>
Aug.	7·8	24·080 <sup>376</sup>	20·74 <sup>8</sup>	4·421 <sup>361</sup>	37·23 <sup>8</sup>	10·284 <sup>276</sup>	23·72 <sup>159</sup>
	17·8	24·456 <sup>385</sup>	20·82 <sup>24</sup>	4·782 <sup>369</sup>	37·31 <sup>24</sup>	10·560 <sup>287</sup>	22·13 <sup>122</sup>
	27·8	24·841 <sup>388</sup>	21·06 <sup>44</sup>	5·151 <sup>374</sup>	37·55 <sup>41</sup>	10·847 <sup>291</sup>	20·91 <sup>77</sup>
Sept.	6·7	25·229 <sup>385</sup>	21·50 <sup>58</sup>	5·525 <sup>371</sup>	37·96 <sup>52</sup>	11·138 <sup>290</sup>	20·14 <sup>30</sup>
	16·7	25·614 <sup>377</sup>	22·08 <sup>73</sup>	5·896 <sup>365</sup>	38·48 <sup>64</sup>	11·428 <sup>284</sup>	19·84 <sup>18</sup>
	26·7	25·991 <sup>364</sup>	22·81 <sup>85</sup>	6·261 <sup>354</sup>	39·12 <sup>75</sup>	11·712 <sup>272</sup>	20·02 <sup>66</sup>
Oct.	6·7	26·355 <sup>349</sup>	23·66 <sup>97</sup>	6·615 <sup>338</sup>	39·87 <sup>86</sup>	11·984 <sup>260</sup>	20·68 <sup>110</sup>
	16·6	26·704 <sup>323</sup>	24·63 <sup>107</sup>	6·953 <sup>317</sup>	40·73 <sup>92</sup>	12·244 <sup>239</sup>	21·78 <sup>153</sup>
	26·6	27·027 <sup>297</sup>	25·70 <sup>118</sup>	7·270 <sup>290</sup>	41·65 <sup>103</sup>	12·483 <sup>214</sup>	23·31 <sup>189</sup>
Nov.	5·6	27·324 <sup>264</sup>	26·88 <sup>127</sup>	7·560 <sup>260</sup>	42·68 <sup>110</sup>	12·697 <sup>187</sup>	25·20 <sup>217</sup>
	15·6	27·588 <sup>223</sup>	28·15 <sup>134</sup>	7·820 <sup>222</sup>	43·78 <sup>116</sup>	12·884 <sup>153</sup>	27·37 <sup>236</sup>
	25·5	27·811 <sup>177</sup>	29·49 <sup>137</sup>	8·042 <sup>177</sup>	44·94 <sup>120</sup>	13·037 <sup>117</sup>	29·73 <sup>247</sup>
Dec.	5·5	27·988 <sup>128</sup>	30·86 <sup>139</sup>	8·219 <sup>131</sup>	46·14 <sup>124</sup>	13·154 <sup>76</sup>	32·20 <sup>247</sup>
	15·5	28·116 <sup>69</sup>	32·25 <sup>136</sup>	8·350 <sup>74</sup>	47·38 <sup>120</sup>	13·230 <sup>33</sup>	34·67 <sup>241</sup>
	25·4	28·185 <sup>10</sup>	33·61 <sup>130</sup>	8·424 <sup>19</sup>	48·58 <sup>116</sup>	13·263 <sup>13</sup>	37·08 <sup>226</sup>
	35·4	28·195	34·91	8·443	49·74	13·250	39·34
Mean Place		22·130	33·59	2·550	49·53	9·505	29·48
Sec δ, Tan δ		1·383	+0·956	1·328	+0·873	1·082	-0·414
L α, L δ		+0·02	+0·1	+0·02	+0·1	-0·01	+0·1
ω α, ω δ		-0·02	+1·0	-0·02	+1·0	+0·01	+1·0
AUTHORITY		A. E.		A. E.		A. E.	

# 308 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Eridani. Mag. 2.9		$\mu$ Leporis. Mag. 3.3		$\beta$ Orionis. Mag. 0.3			
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.		
	<sup>h</sup> 5	<sup>m</sup> 4	<sup>°</sup> 5	<sup>'</sup> 11	<sup>h</sup> 5	<sup>m</sup> 10	<sup>°</sup> 8	<sup>'</sup> 17
Jan. 0.4	2.407 <sup>s</sup>	17	21.04 <sup>141</sup>	27.155 <sup>24</sup>	60.99 <sup>194</sup>	48.829 <sup>14</sup>	37.84 <sup>159</sup>	
10.4	2.390 <sup>57</sup>	17	22.45 <sup>126</sup>	27.131 <sup>67</sup>	62.93 <sup>172</sup>	48.815 <sup>56</sup>	39.43 <sup>141</sup>	
20.4	2.333 <sup>100</sup>	17	23.71 <sup>107</sup>	27.064 <sup>107</sup>	64.65 <sup>147</sup>	48.759 <sup>99</sup>	40.84 <sup>120</sup>	
30.4	2.233 <sup>132</sup>	17	24.78 <sup>86</sup>	26.957 <sup>142</sup>	66.12 <sup>116</sup>	48.660 <sup>130</sup>	42.04 <sup>96</sup>	
Feb. 9.3	2.101 <sup>160</sup>	17	25.64 <sup>65</sup>	26.815 <sup>171</sup>	67.28 <sup>86</sup>	48.530 <sup>157</sup>	43.00 <sup>72</sup>	
19.3	1.941 <sup>175</sup>	17	26.29 <sup>41</sup>	26.644 <sup>191</sup>	68.14 <sup>53</sup>	48.373 <sup>180</sup>	43.72 <sup>48</sup>	
Mar. 1.3	1.766 <sup>189</sup>	17	26.70 <sup>20</sup>	26.453 <sup>201</sup>	68.67 <sup>21</sup>	48.193 <sup>191</sup>	44.20 <sup>21</sup>	
11.2	1.577 <sup>186</sup>	17	26.90 <sup>0</sup>	26.252 <sup>202</sup>	68.88 <sup>12</sup>	48.002 <sup>190</sup>	44.41 <sup>5</sup>	
21.2	1.391 <sup>177</sup>	17	26.90 <sup>26</sup>	26.050 <sup>191</sup>	68.76 <sup>44</sup>	47.812 <sup>182</sup>	44.36 <sup>27</sup>	
31.2	1.214 <sup>159</sup>	17	26.64 <sup>49</sup>	25.859 <sup>172</sup>	68.32 <sup>75</sup>	47.630 <sup>165</sup>	44.09 <sup>55</sup>	
Apr. 10.2	1.055 <sup>130</sup>	17	26.15 <sup>72</sup>	25.687 <sup>145</sup>	67.57 <sup>105</sup>	47.465 <sup>135</sup>	43.54 <sup>81</sup>	
20.1	0.925 <sup>92</sup>	17	25.43 <sup>93</sup>	25.542 <sup>111</sup>	66.52 <sup>133</sup>	47.330 <sup>100</sup>	42.73 <sup>104</sup>	
30.1	0.833 <sup>57</sup>	17	24.50 <sup>113</sup>	25.431 <sup>70</sup>	65.19 <sup>158</sup>	47.230 <sup>65</sup>	41.69 <sup>123</sup>	
May 10.1	0.776 <sup>12</sup>	17	23.37 <sup>131</sup>	25.361 <sup>28</sup>	63.61 <sup>182</sup>	47.165 <sup>21</sup>	40.46 <sup>146</sup>	
20.1	0.764 <sup>32</sup>	17	22.06 <sup>148</sup>	25.333 <sup>17</sup>	61.79 <sup>200</sup>	47.144 <sup>22</sup>	39.00 <sup>161</sup>	
30.0	0.796 <sup>74</sup>	17	20.58 <sup>161</sup>	25.350 <sup>60</sup>	59.79 <sup>215</sup>	47.166 <sup>67</sup>	37.39 <sup>177</sup>	
June 9.0	0.870 <sup>114</sup>	17	18.97 <sup>173</sup>	25.410 <sup>103</sup>	57.64 <sup>225</sup>	47.233 <sup>107</sup>	35.62 <sup>186</sup>	
19.0	0.984 <sup>150</sup>	17	17.24 <sup>175</sup>	25.513 <sup>141</sup>	55.39 <sup>229</sup>	47.340 <sup>142</sup>	33.76 <sup>189</sup>	
28.9	1.134 <sup>187</sup>	17	15.49 <sup>177</sup>	25.654 <sup>177</sup>	53.10 <sup>226</sup>	47.482 <sup>181</sup>	31.87 <sup>191</sup>	
July 8.9	1.321 <sup>215</sup>	17	13.72 <sup>174</sup>	25.831 <sup>208</sup>	50.84 <sup>217</sup>	47.663 <sup>208</sup>	29.96 <sup>186</sup>	
18.9	1.536 <sup>236</sup>	17	11.98 <sup>165</sup>	26.039 <sup>234</sup>	48.67 <sup>202</sup>	47.871 <sup>232</sup>	28.10 <sup>174</sup>	
28.9	1.772 <sup>256</sup>	17	10.33 <sup>148</sup>	26.273 <sup>254</sup>	46.65 <sup>179</sup>	48.103 <sup>251</sup>	26.36 <sup>159</sup>	
Aug. 7.9	2.028 <sup>269</sup>	17	8.85 <sup>128</sup>	26.527 <sup>268</sup>	44.86 <sup>151</sup>	48.354 <sup>267</sup>	24.77 <sup>133</sup>	
17.8	2.297 <sup>278</sup>	17	7.57 <sup>102</sup>	26.795 <sup>279</sup>	43.35 <sup>117</sup>	48.621 <sup>275</sup>	23.44 <sup>107</sup>	
27.8	2.575 <sup>279</sup>	17	6.55 <sup>72</sup>	27.074 <sup>282</sup>	42.18 <sup>78</sup>	48.896 <sup>280</sup>	22.37 <sup>73</sup>	
Sept. 6.8	2.854 <sup>278</sup>	17	5.83 <sup>40</sup>	27.356 <sup>284</sup>	41.40 <sup>36</sup>	49.176 <sup>279</sup>	21.64 <sup>40</sup>	
16.7	3.132 <sup>273</sup>	17	5.43 <sup>4</sup>	27.640 <sup>278</sup>	41.04 <sup>8</sup>	49.455 <sup>274</sup>	21.24 <sup>1</sup>	
26.7	3.405 <sup>264</sup>	17	5.39 <sup>29</sup>	27.918 <sup>270</sup>	41.12 <sup>51</sup>	49.729 <sup>267</sup>	21.23 <sup>34</sup>	
Oct. 6.7	3.669 <sup>252</sup>	17	5.68 <sup>62</sup>	28.188 <sup>257</sup>	41.63 <sup>93</sup>	49.996 <sup>255</sup>	21.57 <sup>73</sup>	
16.6	3.921 <sup>234</sup>	17	6.30 <sup>93</sup>	28.445 <sup>240</sup>	42.56 <sup>131</sup>	50.251 <sup>239</sup>	22.30 <sup>102</sup>	
26.6	4.155 <sup>216</sup>	17	7.23 <sup>117</sup>	28.685 <sup>219</sup>	43.87 <sup>164</sup>	50.490 <sup>222</sup>	23.32 <sup>132</sup>	
Nov. 5.6	4.371 <sup>190</sup>	17	8.40 <sup>138</sup>	28.904 <sup>193</sup>	45.51 <sup>191</sup>	50.712 <sup>194</sup>	24.64 <sup>153</sup>	
15.6	4.561 <sup>162</sup>	17	9.78 <sup>151</sup>	29.097 <sup>162</sup>	47.42 <sup>209</sup>	50.906 <sup>167</sup>	26.17 <sup>169</sup>	
25.5	4.723 <sup>129</sup>	17	11.29 <sup>163</sup>	29.259 <sup>128</sup>	49.51 <sup>219</sup>	51.073 <sup>132</sup>	27.86 <sup>179</sup>	
Dec. 5.5	4.852 <sup>92</sup>	17	12.92 <sup>160</sup>	29.387 <sup>89</sup>	51.70 <sup>222</sup>	51.205 <sup>98</sup>	29.65 <sup>179</sup>	
15.5	4.944 <sup>50</sup>	17	14.52 <sup>157</sup>	29.476 <sup>47</sup>	53.92 <sup>216</sup>	51.303 <sup>54</sup>	31.44 <sup>176</sup>	
25.5	4.994 <sup>10</sup>	17	16.09 <sup>148</sup>	29.523 <sup>4</sup>	56.08 <sup>202</sup>	51.357 <sup>15</sup>	33.20 <sup>168</sup>	
35.4	5.004	17	17.57	29.527	58.10	51.372	34.88	
Mean Place	0.894	10.10	25.632	48.62	47.304	26.44		
Sec $\delta$ , Tan $\delta$	1.004	-0.091	1.042	-0.292	1.011	-0.146		
L $\alpha$ , L $\delta$	0.00	+0.1	-0.01	+0.1	0.00	+0.1		
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+1.0	0.00	+1.0	0.00	+1.0		
AUTHORITY	A. E.		A. E.		A. E.			

# APPARENT PLACES OF STARS, 1922. 309

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Aurigæ. Mag. 0.2		$\gamma$ Orionis. Mag. 4.6		$\eta$ Orionis (mean). Mag. 3.4	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	h m 5 10	° ' " 45 54	h m 5 17	° ' " 0 27	h m 5 20	° ' " 2 28
Jan. 0.4	57.820 <sup>11</sup>	68.31 <sup>133</sup>	48.324 <sup>0</sup>	40.37 <sup>122</sup>	34.850 <sup>0</sup>	14.93 <sup>133</sup>
10.4	57.809 <sup>75</sup>	69.64 <sup>123</sup>	48.324 <sup>45</sup>	41.59 <sup>108</sup>	34.850 <sup>43</sup>	16.26 <sup>118</sup>
20.4	57.734 <sup>131</sup>	70.87 <sup>104</sup>	48.279 <sup>84</sup>	42.67 <sup>94</sup>	34.807 <sup>84</sup>	17.44 <sup>102</sup>
30.4	57.603 <sup>182</sup>	71.91 <sup>80</sup>	48.195 <sup>121</sup>	43.61 <sup>75</sup>	34.723 <sup>121</sup>	18.46 <sup>83</sup>
Feb. 9.3	57.421 <sup>223</sup>	72.71 <sup>54</sup>	48.074 <sup>153</sup>	44.36 <sup>58</sup>	34.602 <sup>152</sup>	19.29 <sup>63</sup>
19.3	57.198 <sup>250</sup>	73.25 <sup>26</sup>	47.921 <sup>172</sup>	44.94 <sup>40</sup>	34.450 <sup>173</sup>	19.92 <sup>43</sup>
Mar. 1.3	56.948 <sup>266</sup>	73.51 <sup>8</sup>	47.749 <sup>185</sup>	45.34 <sup>22</sup>	34.277 <sup>186</sup>	20.35 <sup>23</sup>
11.2	56.682 <sup>267</sup>	73.43 <sup>36</sup>	47.564 <sup>188</sup>	45.56 <sup>4</sup>	34.091 <sup>188</sup>	20.58 <sup>3</sup>
21.2	56.415 <sup>252</sup>	73.07 <sup>66</sup>	47.376 <sup>178</sup>	45.60 <sup>15</sup>	33.903 <sup>181</sup>	20.61 <sup>17</sup>
31.2	56.163 <sup>224</sup>	72.41 <sup>91</sup>	47.198 <sup>161</sup>	45.45 <sup>33</sup>	33.722 <sup>162</sup>	20.44 <sup>38</sup>
Apr. 10.2	55.939 <sup>185</sup>	71.50 <sup>109</sup>	47.037 <sup>135</sup>	45.12 <sup>51</sup>	33.560 <sup>137</sup>	20.06 <sup>57</sup>
20.1	55.754 <sup>135</sup>	70.41 <sup>124</sup>	46.902 <sup>101</sup>	44.61 <sup>69</sup>	33.423 <sup>104</sup>	19.49 <sup>76</sup>
30.1	55.619 <sup>77</sup>	69.17 <sup>137</sup>	46.801 <sup>62</sup>	43.92 <sup>88</sup>	33.319 <sup>66</sup>	18.73 <sup>96</sup>
May 10.1	55.542 <sup>19</sup>	67.80 <sup>140</sup>	46.739 <sup>20</sup>	43.04 <sup>104</sup>	33.253 <sup>24</sup>	17.77 <sup>113</sup>
20.1	55.523 <sup>43</sup>	66.40 <sup>139</sup>	46.719 <sup>23</sup>	42.00 <sup>119</sup>	33.229 <sup>19</sup>	16.64 <sup>130</sup>
30.0	55.566 <sup>105</sup>	65.01 <sup>133</sup>	46.742 <sup>65</sup>	40.81 <sup>133</sup>	33.248 <sup>61</sup>	15.34 <sup>142</sup>
June 9.0	55.671 <sup>163</sup>	63.68 <sup>124</sup>	46.807 <sup>106</sup>	39.48 <sup>143</sup>	33.309 <sup>102</sup>	13.92 <sup>153</sup>
19.0	55.834 <sup>218</sup>	62.44 <sup>111</sup>	46.913 <sup>144</sup>	38.05 <sup>150</sup>	33.411 <sup>141</sup>	12.39 <sup>160</sup>
28.9	56.052 <sup>262</sup>	61.33 <sup>93</sup>	47.057 <sup>178</sup>	36.55 <sup>152</sup>	33.552 <sup>174</sup>	10.79 <sup>162</sup>
July 8.9	56.314 <sup>304</sup>	60.40 <sup>74</sup>	47.235 <sup>206</sup>	35.03 <sup>150</sup>	33.726 <sup>204</sup>	9.17 <sup>159</sup>
18.9	56.618 <sup>338</sup>	59.66 <sup>55</sup>	47.441 <sup>232</sup>	33.53 <sup>144</sup>	33.930 <sup>228</sup>	7.58 <sup>151</sup>
28.9	56.956 <sup>363</sup>	59.11 <sup>35</sup>	47.673 <sup>250</sup>	32.09 <sup>132</sup>	34.158 <sup>247</sup>	6.07 <sup>138</sup>
Aug. 7.8	57.319 <sup>382</sup>	58.76 <sup>18</sup>	47.923 <sup>265</sup>	30.77 <sup>115</sup>	34.405 <sup>263</sup>	4.69 <sup>119</sup>
17.8	57.701 <sup>394</sup>	58.58 <sup>4</sup>	48.188 <sup>273</sup>	29.62 <sup>94</sup>	34.668 <sup>272</sup>	3.50 <sup>97</sup>
27.8	58.095 <sup>401</sup>	58.62 <sup>23</sup>	48.461 <sup>278</sup>	28.68 <sup>67</sup>	34.940 <sup>277</sup>	2.53 <sup>70</sup>
Sept. 6.8	58.496 <sup>401</sup>	58.85 <sup>40</sup>	48.739 <sup>279</sup>	28.01 <sup>41</sup>	35.217 <sup>279</sup>	1.83 <sup>39</sup>
16.7	58.897 <sup>398</sup>	59.25 <sup>57</sup>	49.018 <sup>276</sup>	27.60 <sup>9</sup>	35.496 <sup>276</sup>	1.44 <sup>8</sup>
26.7	59.295 <sup>384</sup>	59.82 <sup>72</sup>	49.294 <sup>270</sup>	27.51 <sup>20</sup>	35.772 <sup>269</sup>	1.36 <sup>24</sup>
Oct. 6.7	59.679 <sup>371</sup>	60.54 <sup>84</sup>	49.564 <sup>259</sup>	27.71 <sup>49</sup>	36.041 <sup>260</sup>	1.60 <sup>55</sup>
16.6	60.050 <sup>353</sup>	61.38 <sup>102</sup>	49.823 <sup>246</sup>	28.20 <sup>77</sup>	36.301 <sup>246</sup>	2.15 <sup>84</sup>
26.6	60.403 <sup>322</sup>	62.40 <sup>113</sup>	50.069 <sup>227</sup>	28.97 <sup>99</sup>	36.547 <sup>229</sup>	2.99 <sup>108</sup>
Nov. 5.6	60.725 <sup>290</sup>	63.53 <sup>127</sup>	50.296 <sup>205</sup>	29.96 <sup>117</sup>	36.776 <sup>205</sup>	4.07 <sup>128</sup>
15.6	61.015 <sup>250</sup>	64.80 <sup>136</sup>	50.501 <sup>178</sup>	31.13 <sup>130</sup>	36.981 <sup>179</sup>	5.35 <sup>141</sup>
25.5	61.265 <sup>201</sup>	66.16 <sup>143</sup>	50.679 <sup>146</sup>	32.43 <sup>138</sup>	37.160 <sup>147</sup>	6.76 <sup>150</sup>
Dec. 5.5	61.466 <sup>150</sup>	67.59 <sup>148</sup>	50.825 <sup>109</sup>	33.81 <sup>138</sup>	37.307 <sup>111</sup>	8.26 <sup>150</sup>
15.5	61.616 <sup>91</sup>	69.07 <sup>146</sup>	50.934 <sup>69</sup>	35.19 <sup>135</sup>	37.418 <sup>70</sup>	9.76 <sup>147</sup>
25.5	61.707 <sup>28</sup>	70.53 <sup>142</sup>	51.003 <sup>27</sup>	36.54 <sup>127</sup>	37.488 <sup>27</sup>	11.23 <sup>138</sup>
35.4	61.735	71.95	51.030	37.81	37.515	12.61
Mean Place	55.453	72.90	46.763	29.86	33.290	4.15
Sec $\delta$ , Tan $\delta$	1.437	+1.033	1.000	-0.008	1.001	-0.043
L $\alpha$ , L $\delta$	+0.03	+0.1	0.00	+0.1	0.00	+0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+1.0	0.00	+1.0	0.00	+1.0
AUTHORITY	A. E.				A. N.	

# 310 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\gamma$ Orionis. Mag. 1·7		$\beta$ Tauri. Mag. 1·8		$\beta$ Leporis. Mag. 3·0	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 5 20	<sup>°</sup> <sup>'</sup> 6 16	<sup>h</sup> <sup>m</sup> 5 21	<sup>°</sup> <sup>'</sup> 28 32	<sup>h</sup> <sup>m</sup> 5 24	<sup>°</sup> <sup>'</sup> 20 49
Jan.	0·4 58·397 <sup>s</sup> 6	38·77 87	23·466 <sup>s</sup> 9	27·32 40	55·780 <sup>s</sup> 16	27·54 220
	10·4 58·403 38	37·90 75	23·475 37	27·72 37	55·764 62	29·74 198
	20·4 58·365 81	37·15 67	23·438 89	28·09 32	55·702 105	31·72 169
	30·4 58·284 116	36·48 54	23·349 128	28·41 26	55·597 142	33·41 137
Feb.	9·3 58·168 148	35·94 42	23·221 166	28·67 17	55·455 173	34·78 103
	19·3 58·020 171	35·52 32	23·055 192	28·84 4	55·282 196	35·81 67
Mar.	1·3 57·849 183	35·20 19	22·863 205	28·88 9	55·086 209	36·48 31
	11·3 57·666 187	35·01 9	22·658 207	28·79 17	54·877 211	36·79 5
	21·2 57·479 178	34·92 4	22·451 198	28·62 32	54·666 205	36·74 41
	31·2 57·301 160	34·96 15	22·253 178	28·30 42	54·461 187	36·33 76
Apr.	10·2 57·141 134	35·11 29	22·075 149	27·88 47	54·274 161	35·57 109
	20·1 57·007 102	35·40 42	21·926 109	27·41 51	54·113 129	34·48 139
	30·1 56·905 60	35·82 56	21·817 67	26·90 51	53·984 89	33·09 168
May	10·1 56·845 21	36·38 70	21·750 16	26·39 48	53·895 48	31·41 193
	20·1 56·824 24	37·08 82	21·734 30	25·91 42	53·847 3	29·48 214
	30·0 56·848 68	37·90 95	21·764 81	25·49 36	53·844 41	27·34 230
June	9·0 56·916 108	38·85 104	21·845 128	25·13 26	53·885 84	25·04 241
	19·0 57·024 146	39·89 113	21·973 168	24·87 16	53·969 125	22·63 244
	29·0 57·170 180	41·02 115	22·141 209	24·71 6	54·094 162	20·19 243
July	8·9 57·350 210	42·17 118	22·350 241	24·65 4	54·256 195	17·76 233
	18·9 57·560 235	43·35 115	22·591 267	24·69 14	54·451 223	15·43 218
	28·9 57·795 252	44·50 107	22·858 286	24·83 22	54·674 246	13·25 193
Aug.	7·8 58·047 268	45·57 94	23·144 306	25·05 25	54·920 264	11·32 163
	17·8 58·315 277	46·51 81	23·450 315	25·30 32	55·184 277	9·69 127
	27·8 58·592 281	47·32 59	23·765 321	25·62 32	55·461 285	8·42 86
Sept.	6·8 58·873 284	47·91 40	24·086 323	25·94 34	55·746 287	7·56 40
	16·7 59·157 281	48·31 15	24·409 322	26·28 33	56·033 286	7·16 7
	26·7 59·438 275	48·46 9	24·731 313	26·61 32	56·319 279	7·23 56
Oct.	6·7 59·713 264	48·37 31	25·044 303	26·93 30	56·598 269	7·79 98
	16·7 59·977 253	48·06 53	25·347 290	27·23 30	56·867 252	8·77 142
	26·6 60·230 234	47·53 70	25·637 270	27·53 28	57·119 233	10·19 179
Nov.	5·6 60·464 213	46·83 85	25·907 245	27·81 33	57·352 206	11·98 209
	15·6 60·677 184	45·98 93	26·152 216	28·14 33	57·558 176	14·07 230
	25·6 60·861 154	45·05 100	26·368 179	28·47 34	57·734 141	16·37 243
Dec.	5·5 61·015 118	44·05 99	26·547 138	28·81 38	57·875 101	18·80 247
	15·5 61·133 77	43·06 96	26·685 93	29·19 42	57·976 58	21·27 242
	25·5 61·210 33	42·10 90	26·778 45	29·61 42	58·034 12	23·69 230
	35·4 61·243	41·20	26·823	30·03	58·046	25·99
Mean Place	56·796	48·54	21·593	34·52	54·196	14·86
Sec $\delta$ , Tan $\delta$	1·006	+0·110	1·138	+0·544	1·070	-0·380
L $\alpha$ , L $\delta$	0·00	+0·1	+0·01	+0·1	-0·01	+0·1
$\omega$ , $\alpha$ , $\omega$ $\delta$	0·00	+1·0	-0·01	+1·0	0·00	+1·0
AUTHORITY	A. E.		A. E.		A. N.	

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## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	20 G. Pictoris. Mag. 5.5		8 Orionis Mag. 2.5		α Leporis. Mag. 2.7	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	h m 5 27	° ' 47 7	h m 5 28	° ' 0 21	h m 5 29	° ' 17 52
Jan. 0.4	62.682 <sup>79</sup>	76.83 <sup>302</sup>	2.839 <sup>6</sup>	31.34 <sup>124</sup>	18.970 <sup>10</sup>	50.16 <sup>210</sup>
10.4	62.603 <sup>139</sup>	79.85 <sup>271</sup>	2.845 <sup>34</sup>	32.58 <sup>111</sup>	18.960 <sup>52</sup>	52.26 <sup>186</sup>
20.4	62.464 <sup>192</sup>	82.56 <sup>232</sup>	2.811 <sup>79</sup>	33.69 <sup>95</sup>	18.908 <sup>98</sup>	54.12 <sup>164</sup>
30.4	62.272 <sup>238</sup>	84.88 <sup>187</sup>	2.732 <sup>117</sup>	34.64 <sup>27</sup>	18.810 <sup>136</sup>	55.76 <sup>134</sup>
Feb. 9.3	62.034 <sup>276</sup>	86.75 <sup>140</sup>	2.615 <sup>145</sup>	35.41 <sup>60</sup>	18.674 <sup>166</sup>	57.10 <sup>99</sup>
19.3	61.758 <sup>303</sup>	88.15 <sup>88</sup>	2.470 <sup>171</sup>	36.01 <sup>42</sup>	18.508 <sup>191</sup>	58.09 <sup>67</sup>
Mar. 1.3	61.455 <sup>317</sup>	89.03 <sup>37</sup>	2.299 <sup>184</sup>	36.43 <sup>23</sup>	18.317 <sup>202</sup>	58.76 <sup>35</sup>
11.3	61.138 <sup>321</sup>	89.40 <sup>15</sup>	2.115 <sup>186</sup>	36.66 <sup>7</sup>	18.115 <sup>206</sup>	59.11 <sup>2</sup>
21.2	60.817 <sup>311</sup>	89.25 <sup>65</sup>	1.929 <sup>180</sup>	36.73 <sup>13</sup>	17.909 <sup>198</sup>	59.09 <sup>36</sup>
31.2	60.506 <sup>291</sup>	88.60 <sup>113</sup>	1.749 <sup>168</sup>	36.60 <sup>30</sup>	17.711 <sup>183</sup>	58.73 <sup>68</sup>
Apr. 10.2	60.215 <sup>259</sup>	87.47 <sup>159</sup>	1.581 <sup>139</sup>	36.30 <sup>50</sup>	17.528 <sup>158</sup>	58.05 <sup>98</sup>
20.1	59.956 <sup>220</sup>	85.88 <sup>200</sup>	1.442 <sup>108</sup>	35.80 <sup>69</sup>	17.370 <sup>126</sup>	57.07 <sup>130</sup>
30.1	59.736 <sup>172</sup>	83.88 <sup>237</sup>	1.334 <sup>70</sup>	35.11 <sup>85</sup>	17.244 <sup>89</sup>	55.77 <sup>155</sup>
May 10.1	59.564 <sup>120</sup>	81.51 <sup>269</sup>	1.264 <sup>28</sup>	34.26 <sup>101</sup>	17.155 <sup>46</sup>	54.22 <sup>181</sup>
20.1	59.444 <sup>63</sup>	78.82 <sup>294</sup>	1.236 <sup>15</sup>	33.25 <sup>116</sup>	17.109 <sup>5</sup>	52.41 <sup>199</sup>
30.0	59.381 <sup>6</sup>	75.88 <sup>313</sup>	1.251 <sup>54</sup>	32.09 <sup>130</sup>	17.104 <sup>39</sup>	50.42 <sup>216</sup>
June 9.0	59.375 <sup>51</sup>	72.75 <sup>323</sup>	1.305 <sup>99</sup>	30.79 <sup>140</sup>	17.143 <sup>83</sup>	48.26 <sup>227</sup>
19.0	59.426 <sup>107</sup>	69.52 <sup>325</sup>	1.404 <sup>132</sup>	29.39 <sup>146</sup>	17.226 <sup>123</sup>	45.99 <sup>231</sup>
29.0	59.533 <sup>161</sup>	66.27 <sup>319</sup>	1.536 <sup>169</sup>	27.93 <sup>150</sup>	17.349 <sup>157</sup>	43.68 <sup>232</sup>
July 8.9	59.694 <sup>209</sup>	63.08 <sup>304</sup>	1.705 <sup>200</sup>	26.43 <sup>144</sup>	17.506 <sup>193</sup>	41.36 <sup>221</sup>
18.9	59.903 <sup>251</sup>	60.04 <sup>278</sup>	1.905 <sup>223</sup>	24.99 <sup>141</sup>	17.699 <sup>217</sup>	39.15 <sup>208</sup>
28.9	60.154 <sup>290</sup>	57.26 <sup>246</sup>	2.128 <sup>245</sup>	23.58 <sup>129</sup>	17.916 <sup>243</sup>	37.07 <sup>186</sup>
Aug. 7.8	60.444 <sup>319</sup>	54.80 <sup>203</sup>	2.373 <sup>261</sup>	22.29 <sup>114</sup>	18.159 <sup>259</sup>	35.21 <sup>159</sup>
17.8	60.763 <sup>343</sup>	52.77 <sup>155</sup>	2.634 <sup>270</sup>	21.15 <sup>91</sup>	18.418 <sup>274</sup>	33.62 <sup>124</sup>
27.8	61.106 <sup>357</sup>	51.22 <sup>99</sup>	2.904 <sup>278</sup>	20.24 <sup>66</sup>	18.692 <sup>281</sup>	32.38 <sup>83</sup>
Sept. 6.8	61.463 <sup>366</sup>	50.23 <sup>40</sup>	3.182 <sup>280</sup>	19.58 <sup>40</sup>	18.973 <sup>284</sup>	31.55 <sup>42</sup>
16.7	61.829 <sup>364</sup>	49.83 <sup>22</sup>	3.462 <sup>277</sup>	19.18 <sup>6</sup>	19.257 <sup>285</sup>	31.13 <sup>3</sup>
26.7	62.193 <sup>355</sup>	50.05 <sup>84</sup>	3.739 <sup>274</sup>	19.12 <sup>20</sup>	19.542 <sup>277</sup>	31.16 <sup>48</sup>
Oct. 6.7	62.548 <sup>338</sup>	50.89 <sup>143</sup>	4.013 <sup>262</sup>	19.32 <sup>52</sup>	19.819 <sup>268</sup>	31.64 <sup>90</sup>
16.7	62.886 <sup>313</sup>	52.32 <sup>198</sup>	4.275 <sup>253</sup>	19.84 <sup>78</sup>	20.087 <sup>254</sup>	32.54 <sup>133</sup>
26.6	63.199 <sup>280</sup>	54.30 <sup>247</sup>	4.528 <sup>235</sup>	20.62 <sup>99</sup>	20.341 <sup>235</sup>	33.87 <sup>167</sup>
Nov. 5.6	63.479 <sup>239</sup>	56.77 <sup>285</sup>	4.763 <sup>214</sup>	21.61 <sup>118</sup>	20.576 <sup>210</sup>	35.54 <sup>196</sup>
15.6	63.718 <sup>192</sup>	59.62 <sup>315</sup>	4.977 <sup>186</sup>	22.79 <sup>132</sup>	20.786 <sup>181</sup>	37.50 <sup>217</sup>
25.6	63.910 <sup>139</sup>	62.77 <sup>331</sup>	5.163 <sup>154</sup>	24.11 <sup>139</sup>	20.967 <sup>144</sup>	39.67 <sup>230</sup>
Dec. 5.5	64.049 <sup>81</sup>	66.08 <sup>338</sup>	5.317 <sup>121</sup>	25.50 <sup>140</sup>	21.111 <sup>108</sup>	41.97 <sup>235</sup>
15.5	64.130 <sup>20</sup>	69.46 <sup>332</sup>	5.438 <sup>77</sup>	26.90 <sup>137</sup>	21.219 <sup>64</sup>	44.32 <sup>233</sup>
25.5	64.150 <sup>41</sup>	72.78 <sup>315</sup>	5.515 <sup>35</sup>	28.27 <sup>129</sup>	21.283 <sup>22</sup>	46.65 <sup>218</sup>
35.4	64.109	75.93	5.550	29.56	21.305	48.83
Mean Place	60.713	62.30	1.259	20.71	17.385	37.82
Sec δ, Tan δ	1.470	-1.077	1.000	-0.006	1.051	-0.322
L α, L δ	-0.03	+0.1	0.00	+0.1	-0.01	+0.1
ω α, ω δ	+0.01	+1.0	0.00	+1.0	0.00	+1.0
AUTHORITY			A. E.		A. E.	

# 312 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ι Orionis. Mag. 2·9		ε Orionis. Mag. 1·7		β Doradus. Mag. 3·8	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 5 31	<sup>°</sup> <sup>'</sup> 5 57	<sup>h</sup> <sup>m</sup> 5 32	<sup>°</sup> <sup>'</sup> 1 15	<sup>h</sup> <sup>m</sup> 5 32	<sup>°</sup> <sup>'</sup> 62 32
Jan.	0·5 38·606 <sup>6</sup>	47·47 <sup>155</sup>	16·879 <sup>10</sup>	12·81 <sup>131</sup>	59·65 <sup>17</sup>	42·65 <sup>322</sup>
	10·4 38·612 <sup>37</sup>	49·02 <sup>138</sup>	16·889 <sup>34</sup>	14·12 <sup>117</sup>	59·48 <sup>26</sup>	45·87 <sup>290</sup>
	20·4 38·575 <sup>81</sup>	50·40 <sup>119</sup>	16·855 <sup>76</sup>	15·29 <sup>100</sup>	59·22 <sup>32</sup>	48·77 <sup>248</sup>
	30·4 38·494 <sup>118</sup>	51·59 <sup>97</sup>	16·779 <sup>114</sup>	16·29 <sup>80</sup>	58·90 <sup>40</sup>	51·25 <sup>202</sup>
Feb.	9·3 38·376 <sup>149</sup>	52·56 <sup>75</sup>	16·665 <sup>146</sup>	17·09 <sup>63</sup>	58·50 <sup>44</sup>	53·27 <sup>149</sup>
	19·3 38·227 <sup>172</sup>	53·31 <sup>51</sup>	16·519 <sup>168</sup>	17·72 <sup>45</sup>	58·06 <sup>48</sup>	54·76 <sup>97</sup>
Mar.	1·3 38·055 <sup>188</sup>	53·82 <sup>28</sup>	16·351 <sup>184</sup>	18·17 <sup>26</sup>	57·58 <sup>50</sup>	55·73 <sup>41</sup>
	11·3 37·867 <sup>191</sup>	54·10 <sup>5</sup>	16·167 <sup>187</sup>	18·43 <sup>5</sup>	57·08 <sup>50</sup>	56·14 <sup>13</sup>
	21·2 37·676 <sup>185</sup>	54·15 <sup>21</sup>	15·980 <sup>182</sup>	18·48 <sup>12</sup>	56·58 <sup>49</sup>	56·01 <sup>68</sup>
	31·2 37·491 <sup>170</sup>	53·94 <sup>40</sup>	15·798 <sup>170</sup>	18·36 <sup>33</sup>	56·09 <sup>47</sup>	55·33 <sup>119</sup>
Apr.	10·2 37·321 <sup>144</sup>	53·54 <sup>66</sup>	15·628 <sup>141</sup>	18·03 <sup>51</sup>	55·62 <sup>42</sup>	54·14 <sup>168</sup>
	20·2 37·177 <sup>115</sup>	52·88 <sup>88</sup>	15·487 <sup>110</sup>	17·52 <sup>72</sup>	55·20 <sup>37</sup>	52·46 <sup>211</sup>
	30·1 37·062 <sup>75</sup>	52·00 <sup>108</sup>	15·377 <sup>73</sup>	16·80 <sup>86</sup>	54·83 <sup>31</sup>	50·35 <sup>250</sup>
May	10·1 36·987 <sup>37</sup>	50·92 <sup>127</sup>	15·304 <sup>33</sup>	15·94 <sup>106</sup>	54·52 <sup>23</sup>	47·85 <sup>285</sup>
	20·1 36·950 <sup>7</sup>	49·65 <sup>144</sup>	15·271 <sup>9</sup>	14·88 <sup>120</sup>	54·29 <sup>16</sup>	45·00 <sup>311</sup>
	30·0 36·957 <sup>50</sup>	48·21 <sup>158</sup>	15·280 <sup>51</sup>	13·68 <sup>134</sup>	54·13 <sup>8</sup>	41·89 <sup>329</sup>
June	9·0 37·007 <sup>87</sup>	46·63 <sup>168</sup>	15·331 <sup>93</sup>	12·34 <sup>144</sup>	54·05 <sup>1</sup>	38·60 <sup>341</sup>
	19·0 37·094 <sup>129</sup>	44·95 <sup>175</sup>	15·424 <sup>129</sup>	10·90 <sup>150</sup>	54·06 <sup>8</sup>	35·19 <sup>344</sup>
	29·0 37·223 <sup>162</sup>	43·20 <sup>176</sup>	15·553 <sup>164</sup>	9·40 <sup>151</sup>	54·14 <sup>17</sup>	31·75 <sup>336</sup>
July	8·9 37·385 <sup>195</sup>	41·44 <sup>171</sup>	15·717 <sup>197</sup>	7·89 <sup>150</sup>	54·31 <sup>25</sup>	28·39 <sup>319</sup>
	18·9 37·580 <sup>218</sup>	39·73 <sup>164</sup>	15·914 <sup>219</sup>	6·39 <sup>143</sup>	54·56 <sup>31</sup>	25·20 <sup>294</sup>
	28·9 37·798 <sup>240</sup>	38·09 <sup>149</sup>	16·133 <sup>242</sup>	4·96 <sup>132</sup>	54·87 <sup>37</sup>	22·26 <sup>259</sup>
Aug.	7·9 38·038 <sup>255</sup>	36·60 <sup>128</sup>	16·375 <sup>257</sup>	3·64 <sup>115</sup>	55·24 <sup>42</sup>	19·67 <sup>214</sup>
	17·8 38·293 <sup>269</sup>	35·32 <sup>102</sup>	16·632 <sup>270</sup>	2·49 <sup>93</sup>	55·66 <sup>47</sup>	17·53 <sup>162</sup>
	27·8 38·562 <sup>274</sup>	34·30 <sup>73</sup>	16·902 <sup>276</sup>	1·56 <sup>66</sup>	56·13 <sup>49</sup>	15·91 <sup>106</sup>
Sept.	6·8 38·836 <sup>279</sup>	33·57 <sup>40</sup>	17·178 <sup>279</sup>	0·90 <sup>38</sup>	56·62 <sup>51</sup>	14·85 <sup>43</sup>
	16·7 39·115 <sup>277</sup>	33·17 <sup>4</sup>	17·457 <sup>278</sup>	0·52 <sup>9</sup>	57·13 <sup>51</sup>	14·42 <sup>23</sup>
	26·7 39·392 <sup>273</sup>	33·13 <sup>30</sup>	17·735 <sup>275</sup>	0·43 <sup>23</sup>	57·64 <sup>49</sup>	14·65 <sup>87</sup>
Oct.	6·7 39·665 <sup>264</sup>	33·43 <sup>65</sup>	18·010 <sup>265</sup>	0·66 <sup>57</sup>	58·13 <sup>47</sup>	15·52 <sup>151</sup>
	16·7 39·929 <sup>254</sup>	34·08 <sup>97</sup>	18·275 <sup>253</sup>	1·23 <sup>81</sup>	58·60 <sup>43</sup>	17·03 <sup>209</sup>
	26·6 40·183 <sup>235</sup>	35·05 <sup>123</sup>	18·528 <sup>238</sup>	2·04 <sup>104</sup>	59·03 <sup>38</sup>	19·12 <sup>259</sup>
Nov.	5·6 40·418 <sup>212</sup>	36·28 <sup>146</sup>	18·766 <sup>216</sup>	3·08 <sup>122</sup>	59·41 <sup>32</sup>	21·71 <sup>302</sup>
	15·6 40·630 <sup>186</sup>	37·74 <sup>161</sup>	18·982 <sup>190</sup>	4·30 <sup>139</sup>	59·73 <sup>23</sup>	24·73 <sup>331</sup>
	25·6 40·816 <sup>155</sup>	39·35 <sup>171</sup>	19·172 <sup>158</sup>	5·69 <sup>145</sup>	59·96 <sup>16</sup>	28·04 <sup>353</sup>
Dec.	5·5 40·971 <sup>119</sup>	41·06 <sup>173</sup>	19·330 <sup>122</sup>	7·14 <sup>147</sup>	60·12 <sup>7</sup>	31·57 <sup>359</sup>
	15·5 41·090 <sup>77</sup>	42·79 <sup>170</sup>	19·452 <sup>82</sup>	8·61 <sup>143</sup>	60·19 <sup>3</sup>	35·16 <sup>353</sup>
	25·5 41·167 <sup>35</sup>	44·49 <sup>161</sup>	19·534 <sup>37</sup>	10·04 <sup>135</sup>	60·16 <sup>11</sup>	38·69 <sup>336</sup>
	35·4 41·202	46·10	19·571	11·39	60·05	42·05
Mean Place	37·031	36·25	15·294	2·04	56·90	27·81
Sec δ, Tan δ	1·005	-0·104	1·000	-0·022	2·169	-1·924
L α, L δ	0·00	0·0	0·00	0·0	-0·05	0·0
ω α, ω δ	0·00	+1·0	0·00	+1·0	+0·01	+1·0
AUTHORITY	A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 313

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ζ Tauri. Mag. 3.0		ζ Orionis. Mag. 2.0		α Columbæ. Mag. 2.7		
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.	
	<sup>h</sup> 5 <sup>m</sup> 32	<sup>°</sup> 21 <sup>'</sup> 5	<sup>h</sup> 5 <sup>m</sup> 36	<sup>°</sup> 1 <sup>'</sup> 58	<sup>h</sup> 5 <sup>m</sup> 36	<sup>°</sup> 34 <sup>'</sup> 6	
Jan.	0.5 10.4 20.4 30.4	60.706 <sup>24</sup> 60.730 <sup>26</sup> 60.704 <sup>72</sup> 60.632 <sup>115</sup>	37.52 <sup>4</sup> 37.48 <sup>0</sup> 37.48 <sup>1</sup> 37.49 <sup>2</sup>	50.954 <sup>15</sup> 50.969 <sup>30</sup> 50.939 <sup>73</sup> 50.866 <sup>111</sup>	69.27 <sup>135</sup> 70.62 <sup>121</sup> 71.83 <sup>104</sup> 72.87 <sup>85</sup>	51.217 <sup>30</sup> 51.187 <sup>83</sup> 51.104 <sup>127</sup> 50.977 <sup>170</sup>	67.43 <sup>273</sup> 70.16 <sup>251</sup> 72.67 <sup>214</sup> 74.81 <sup>176</sup>
Feb.	9.3 19.3	60.517 <sup>149</sup> 60.368 <sup>177</sup>	37.51 <sup>1</sup> 37.50 <sup>3</sup>	50.755 <sup>145</sup> 50.610 <sup>169</sup>	73.72 <sup>66</sup> 74.38 <sup>46</sup>	50.807 <sup>205</sup> 50.602 <sup>232</sup>	76.57 <sup>137</sup> 77.94 <sup>89</sup>
Mar.	1.3 11.3 21.2 31.2	60.191 <sup>192</sup> 59.999 <sup>197</sup> 59.802 <sup>190</sup> 59.612 <sup>174</sup>	37.47 <sup>7</sup> 37.40 <sup>11</sup> 37.29 <sup>15</sup> 37.14 <sup>18</sup>	50.441 <sup>184</sup> 50.257 <sup>189</sup> 50.068 <sup>184</sup> 49.884 <sup>169</sup>	74.84 <sup>26</sup> 75.10 <sup>6</sup> 75.16 <sup>13</sup> 75.03 <sup>33</sup>	50.370 <sup>248</sup> 50.122 <sup>250</sup> 49.872 <sup>244</sup> 49.628 <sup>227</sup>	78.83 <sup>45</sup> 79.28 <sup>0</sup> 79.28 <sup>45</sup> 78.83 <sup>90</sup>
Apr.	10.2 20.2	59.438 <sup>145</sup> 59.293 <sup>112</sup>	36.96 <sup>18</sup> 36.78 <sup>16</sup>	49.715 <sup>144</sup> 49.571 <sup>114</sup>	74.70 <sup>52</sup> 74.18 <sup>71</sup>	49.401 <sup>202</sup> 49.199 <sup>169</sup>	77.93 <sup>129</sup> 76.64 <sup>168</sup>
May	30.1 10.1 20.1 30.0	59.181 <sup>71</sup> 59.110 <sup>28</sup> 59.082 <sup>20</sup> 59.102 <sup>66</sup>	36.62 <sup>14</sup> 36.48 <sup>8</sup> 36.40 <sup>2</sup> 36.38 <sup>7</sup>	49.457 <sup>78</sup> 49.379 <sup>36</sup> 49.343 <sup>5</sup> 49.348 <sup>47</sup>	73.47 <sup>90</sup> 72.57 <sup>106</sup> 71.51 <sup>123</sup> 70.28 <sup>135</sup>	49.030 <sup>129</sup> 48.901 <sup>85</sup> 48.816 <sup>38</sup> 48.778 <sup>10</sup>	74.96 <sup>203</sup> 72.93 <sup>230</sup> 70.63 <sup>256</sup> 68.07 <sup>277</sup>
June	9.0 19.0 29.0	59.168 <sup>108</sup> 59.276 <sup>149</sup> 59.425 <sup>187</sup>	36.45 <sup>15</sup> 36.60 <sup>23</sup> 36.83 <sup>30</sup>	49.395 <sup>88</sup> 49.483 <sup>125</sup> 49.608 <sup>161</sup>	68.93 <sup>146</sup> 67.47 <sup>153</sup> 65.94 <sup>155</sup>	48.788 <sup>59</sup> 48.847 <sup>104</sup> 48.951 <sup>146</sup>	65.30 <sup>287</sup> 62.43 <sup>292</sup> 59.51 <sup>288</sup>
July	8.9 18.9 28.9	59.612 <sup>218</sup> 59.830 <sup>244</sup> 60.074 <sup>266</sup>	37.13 <sup>38</sup> 37.51 <sup>42</sup> 37.93 <sup>44</sup>	49.769 <sup>191</sup> 49.960 <sup>217</sup> 50.177 <sup>238</sup>	64.39 <sup>153</sup> 62.86 <sup>146</sup> 61.40 <sup>133</sup>	49.097 <sup>189</sup> 49.286 <sup>222</sup> 49.508 <sup>248</sup>	56.63 <sup>277</sup> 53.86 <sup>257</sup> 51.29 <sup>228</sup>
Aug.	7.9 17.8 27.8	60.340 <sup>282</sup> 60.622 <sup>293</sup> 60.915 <sup>300</sup>	38.37 <sup>43</sup> 38.80 <sup>40</sup> 39.20 <sup>36</sup>	50.415 <sup>255</sup> 50.670 <sup>267</sup> 50.937 <sup>274</sup>	60.07 <sup>116</sup> 58.91 <sup>94</sup> 57.97 <sup>68</sup>	49.756 <sup>276</sup> 50.032 <sup>295</sup> 50.327 <sup>305</sup>	49.01 <sup>192</sup> 47.09 <sup>150</sup> 45.59 <sup>100</sup>
Sept.	6.8 16.7 26.7	61.215 <sup>302</sup> 61.517 <sup>305</sup> 61.822 <sup>298</sup>	39.56 <sup>27</sup> 39.83 <sup>21</sup> 40.04 <sup>10</sup>	51.211 <sup>278</sup> 51.489 <sup>278</sup> 51.767 <sup>274</sup>	57.29 <sup>38</sup> 56.91 <sup>7</sup> 56.84 <sup>25</sup>	50.632 <sup>313</sup> 50.945 <sup>314</sup> 51.259 <sup>310</sup>	44.59 <sup>51</sup> 44.08 <sup>8</sup> 44.16 <sup>65</sup>
Oct.	6.7 16.7 26.6	62.120 <sup>292</sup> 62.412 <sup>279</sup> 62.691 <sup>263</sup>	40.14 <sup>2</sup> 40.16 <sup>5</sup> 40.11 <sup>11</sup>	52.041 <sup>267</sup> 52.308 <sup>256</sup> 52.564 <sup>240</sup>	57.09 <sup>56</sup> 57.65 <sup>84</sup> 58.49 <sup>109</sup>	51.569 <sup>296</sup> 51.865 <sup>278</sup> 52.143 <sup>258</sup>	44.81 <sup>120</sup> 46.01 <sup>167</sup> 47.68 <sup>214</sup>
Nov.	5.6 15.6 25.6	62.954 <sup>240</sup> 63.194 <sup>214</sup> 63.408 <sup>181</sup>	40.00 <sup>14</sup> 39.86 <sup>15</sup> 39.71 <sup>14</sup>	52.804 <sup>219</sup> 53.023 <sup>194</sup> 53.217 <sup>162</sup>	59.58 <sup>129</sup> 60.87 <sup>143</sup> 62.30 <sup>150</sup>	52.401 <sup>225</sup> 52.626 <sup>190</sup> 52.816 <sup>151</sup>	49.82 <sup>251</sup> 52.33 <sup>278</sup> 55.11 <sup>297</sup>
Dec.	5.5 15.5 25.5 35.4	63.589 <sup>143</sup> 63.732 <sup>100</sup> 63.832 63.885	39.57 <sup>13</sup> 39.44 <sup>7</sup> 39.37 39.33	53.379 <sup>127</sup> 53.506 <sup>86</sup> 53.592 53.636	63.80 <sup>153</sup> 65.33 <sup>149</sup> 66.82 68.23	52.967 <sup>103</sup> 53.070 <sup>54</sup> 53.124 53.127	58.08 <sup>302</sup> 61.10 <sup>298</sup> 64.08 66.93
Mean Place	58.946	46.09	49.363	58.37	49.472	54.03	
Sec δ, Tan δ	1.072	+0.386	1.001	-0.035	1.208	-0.677	
L α, L δ	+0.01	0.0	0.00	0.0	-0.02	0.0	
ω α, ω δ	0.00	+1.0	0.00	+1.0	0.00	+1.0	
AUTHORITY	A. E.		A. E.		A. E.		

# 314 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	130 Tauri. Mag. 5.5		κ Orionis. Mag. 2.2		β Columbae. Mag. 3.2	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 5 42	<sup>°</sup> 17 41	<sup>h</sup> 5 44	<sup>°</sup> 9 41	<sup>h</sup> 5 48	<sup>°</sup> 35 47
Jan.	0.5 55.027 <sup>33</sup>	54.85 <sup>25</sup>	5.009 <sup>13</sup>	58.20 <sup>178</sup>	14.338 <sup>21</sup>	61.68 <sup>285</sup>
	10.4 55.060 <sup>17</sup>	54.60 <sup>19</sup>	5.022 <sup>32</sup>	59.98 <sup>162</sup>	14.317 <sup>73</sup>	64.53 <sup>260</sup>
	20.4 55.043 <sup>63</sup>	54.41 <sup>14</sup>	4.990 <sup>74</sup>	61.60 <sup>138</sup>	14.244 <sup>124</sup>	67.13 <sup>227</sup>
	30.4 54.980 <sup>105</sup>	54.27 <sup>10</sup>	4.916 <sup>116</sup>	62.98 <sup>114</sup>	14.120 <sup>168</sup>	69.40 <sup>188</sup>
Feb.	9.4 54.875 <sup>142</sup>	54.17 <sup>7</sup>	4.800 <sup>148</sup>	64.12 <sup>88</sup>	13.952 <sup>205</sup>	71.28 <sup>146</sup>
	19.3 54.733 <sup>169</sup>	54.10 <sup>6</sup>	4.652 <sup>172</sup>	65.00 <sup>62</sup>	13.747 <sup>233</sup>	72.74 <sup>102</sup>
Mar.	1.3 54.564 <sup>187</sup>	54.04 <sup>7</sup>	4.480 <sup>189</sup>	65.62 <sup>35</sup>	13.514 <sup>251</sup>	73.76 <sup>56</sup>
	11.3 54.377 <sup>194</sup>	53.97 <sup>7</sup>	4.291 <sup>195</sup>	65.97 <sup>8</sup>	13.263 <sup>258</sup>	74.32 <sup>10</sup>
	21.2 54.183 <sup>189</sup>	53.90 <sup>7</sup>	4.096 <sup>190</sup>	66.05 <sup>18</sup>	13.005 <sup>254</sup>	74.42 <sup>37</sup>
	31.2 53.994 <sup>173</sup>	53.83 <sup>7</sup>	3.906 <sup>176</sup>	65.87 <sup>46</sup>	12.751 <sup>239</sup>	74.05 <sup>80</sup>
Apr.	10.2 53.821 <sup>149</sup>	53.76 <sup>5</sup>	3.730 <sup>155</sup>	65.41 <sup>71</sup>	12.512 <sup>215</sup>	73.25 <sup>123</sup>
	20.2 53.672 <sup>116</sup>	53.71 <sup>2</sup>	3.575 <sup>123</sup>	64.70 <sup>95</sup>	12.297 <sup>183</sup>	72.02 <sup>162</sup>
	30.1 53.556 <sup>77</sup>	53.69 <sup>3</sup>	3.452 <sup>90</sup>	63.75 <sup>119</sup>	12.114 <sup>143</sup>	70.40 <sup>198</sup>
May	10.1 53.479 <sup>35</sup>	53.72 <sup>9</sup>	3.362 <sup>48</sup>	62.56 <sup>141</sup>	11.971 <sup>100</sup>	68.42 <sup>229</sup>
	20.1 53.444 <sup>9</sup>	53.81 <sup>16</sup>	3.314 <sup>8</sup>	61.15 <sup>157</sup>	11.871 <sup>53</sup>	66.13 <sup>256</sup>
	30.1 53.453 <sup>54</sup>	53.97 <sup>24</sup>	3.306 <sup>33</sup>	59.58 <sup>170</sup>	11.818 <sup>4</sup>	63.57 <sup>276</sup>
June	9.0 53.507 <sup>97</sup>	54.21 <sup>32</sup>	3.339 <sup>76</sup>	57.88 <sup>184</sup>	11.814 <sup>44</sup>	60.81 <sup>290</sup>
	19.0 53.604 <sup>137</sup>	54.53 <sup>40</sup>	3.415 <sup>114</sup>	56.04 <sup>191</sup>	11.858 <sup>92</sup>	57.91 <sup>296</sup>
	29.0 53.741 <sup>173</sup>	54.93 <sup>47</sup>	3.529 <sup>147</sup>	54.13 <sup>191</sup>	11.950 <sup>135</sup>	54.95 <sup>294</sup>
July	8.9 53.914 <sup>204</sup>	55.40 <sup>51</sup>	3.676 <sup>182</sup>	52.22 <sup>188</sup>	12.085 <sup>176</sup>	52.01 <sup>284</sup>
	18.9 54.118 <sup>232</sup>	55.91 <sup>53</sup>	3.858 <sup>209</sup>	50.34 <sup>176</sup>	12.261 <sup>213</sup>	49.17 <sup>265</sup>
	28.9 54.350 <sup>253</sup>	56.44 <sup>52</sup>	4.067 <sup>230</sup>	48.58 <sup>162</sup>	12.474 <sup>244</sup>	46.52 <sup>239</sup>
Aug.	7.9 54.603 <sup>271</sup>	56.96 <sup>49</sup>	4.297 <sup>250</sup>	46.96 <sup>137</sup>	12.718 <sup>271</sup>	44.13 <sup>202</sup>
	17.8 54.874 <sup>283</sup>	57.45 <sup>44</sup>	4.547 <sup>263</sup>	45.59 <sup>112</sup>	12.989 <sup>291</sup>	42.11 <sup>160</sup>
	27.8 55.157 <sup>292</sup>	57.89 <sup>34</sup>	4.810 <sup>273</sup>	44.47 <sup>78</sup>	13.280 <sup>306</sup>	40.51 <sup>111</sup>
Sept.	6.8 55.449 <sup>296</sup>	58.23 <sup>24</sup>	5.083 <sup>279</sup>	43.69 <sup>43</sup>	13.586 <sup>315</sup>	39.40 <sup>58</sup>
	16.8 55.745 <sup>297</sup>	58.47 <sup>13</sup>	5.362 <sup>280</sup>	43.26 <sup>3</sup>	13.901 <sup>319</sup>	38.82 <sup>2</sup>
	26.7 56.042 <sup>294</sup>	58.60 <sup>1</sup>	5.642 <sup>276</sup>	43.23 <sup>34</sup>	14.220 <sup>315</sup>	38.80 <sup>57</sup>
Oct.	6.7 56.336 <sup>288</sup>	58.59 <sup>12</sup>	5.918 <sup>268</sup>	43.57 <sup>73</sup>	14.535 <sup>306</sup>	39.37 <sup>112</sup>
	16.7 56.624 <sup>278</sup>	58.47 <sup>22</sup>	6.186 <sup>262</sup>	44.30 <sup>107</sup>	14.841 <sup>291</sup>	40.49 <sup>165</sup>
	26.6 56.902 <sup>263</sup>	58.25 <sup>31</sup>	6.448 <sup>242</sup>	45.37 <sup>138</sup>	15.132 <sup>268</sup>	42.14 <sup>211</sup>
Nov.	5.6 57.165 <sup>243</sup>	57.94 <sup>37</sup>	6.690 <sup>222</sup>	46.75 <sup>162</sup>	15.400 <sup>239</sup>	44.25 <sup>251</sup>
	15.6 57.408 <sup>218</sup>	57.57 <sup>39</sup>	6.912 <sup>196</sup>	48.37 <sup>182</sup>	15.639 <sup>204</sup>	46.76 <sup>280</sup>
	25.6 57.626 <sup>187</sup>	57.18 <sup>39</sup>	7.108 <sup>163</sup>	50.19 <sup>192</sup>	15.843 <sup>163</sup>	49.56 <sup>300</sup>
Dec.	5.5 57.813 <sup>149</sup>	56.79 <sup>36</sup>	7.271 <sup>126</sup>	52.11 <sup>197</sup>	16.006 <sup>116</sup>	52.56 <sup>309</sup>
	15.5 57.962 <sup>108</sup>	56.43 <sup>32</sup>	7.397 <sup>89</sup>	54.08 <sup>195</sup>	16.122 <sup>66</sup>	55.65 <sup>306</sup>
	25.5 58.070 <sup>61</sup>	56.11 <sup>25</sup>	7.486 <sup>43</sup>	56.03 <sup>183</sup>	16.188 <sup>12</sup>	58.71 <sup>296</sup>
	35.5 58.131	55.86	7.529	57.86	16.200	61.67
Mean Place	53.303	64.15	3.411	46.66	12.527	48.62
Sec δ, Tan δ	1.050	+0.319	1.014	-0.171	1.233	-0.721
L α, L δ	+0.01	0.0	0.00	0.0	-0.02	0.0
ω α, ω δ	0.00	+1.0	0.00	+1.0	0.00	+1.0
AUTHORITY	A. N.		A. E.		A. N.	



# APPARENT PLACES OF STARS, 1922. 315

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Orionis. Mag. 1.0-1.4		$\beta$ Aurigæ. Mag. 2.1		$\theta$ Aurigæ. Mag. 2.7	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	h m 5 50	° ' 33 7 23	h m 5 53	° ' 45 44 56	h m 5 54	° ' 12 37 12
Jan. 0.5	58.568 <sup>s</sup> 33	27.04 86	50.784 <sup>s</sup> 45	20.11 137	26.211 <sup>s</sup> 47	22.23 92
10.4	58.601 <sup>s</sup> 13	26.18 76	50.829 <sup>s</sup> 19	21.48 132	26.258 <sup>s</sup> 13	23.15 90
20.4	58.588 <sup>s</sup> 58	25.42 63	50.810 <sup>s</sup> 83	22.80 124	26.245 <sup>s</sup> 67	24.05 86
30.4	58.530 <sup>s</sup> 101	24.79 52	50.727 <sup>s</sup> 138	24.04 106	26.178 <sup>s</sup> 118	24.91 75
Feb. 9.4	58.429 <sup>s</sup> 132	24.27 40	50.589 <sup>s</sup> 191	25.10 86	26.060 <sup>s</sup> 166	25.66 60
19.3	58.297 <sup>s</sup> 161	23.87 29	50.398 <sup>s</sup> 228	25.06 64	25.894 <sup>s</sup> 200	26.26 46
Mar. 1.3	58.136 <sup>s</sup> 180	23.58 17	50.170 <sup>s</sup> 253	26.60 34	25.694 <sup>s</sup> 221	26.72 23
11.3	57.956 <sup>s</sup> 187	23.41 8	49.917 <sup>s</sup> 264	26.94 7	25.473 <sup>s</sup> 232	26.95 4
21.2	57.769 <sup>s</sup> 185	23.33 4	49.653 <sup>s</sup> 261	27.01 23	25.241 <sup>s</sup> 231	26.99 18
31.2	57.584 <sup>s</sup> 170	23.37 13	49.392 <sup>s</sup> 243	26.78 52	25.010 <sup>s</sup> 211	26.81 36
Apr. 10.2	57.414 <sup>s</sup> 146	23.50 25	49.149 <sup>s</sup> 210	26.26 73	24.799 <sup>s</sup> 183	26.45 55
20.2	57.268 <sup>s</sup> 123	23.75 37	48.939 <sup>s</sup> 173	25.53 96	24.616 <sup>s</sup> 150	25.90 67
30.1	57.145 <sup>s</sup> 81	24.12 48	48.766 <sup>s</sup> 122	24.57 109	24.466 <sup>s</sup> 103	25.23 80
May 10.1	57.064 <sup>s</sup> 45	24.60 60	48.644 <sup>s</sup> 65	23.48 122	24.363 <sup>s</sup> 57	24.43 86
20.1	57.019 <sup>s</sup> 0	25.20 72	48.579 <sup>s</sup> 14	22.26 130	24.306 <sup>s</sup> 7	23.57 89
30.1	57.019 <sup>s</sup> 41	25.92 82	48.565 <sup>s</sup> 51	20.96 130	24.299 <sup>s</sup> 50	22.68 88
June 9.0	57.060 <sup>s</sup> 81	26.74 88	48.616 <sup>s</sup> 106	19.66 127	24.349 <sup>s</sup> 99	21.80 84
19.0	57.141 <sup>s</sup> 121	27.62 97	48.722 <sup>s</sup> 161	18.39 123	24.448 <sup>s</sup> 147	20.96 78
29.0	57.262 <sup>s</sup> 154	28.59 101	48.883 <sup>s</sup> 209	17.16 113	24.595 <sup>s</sup> 193	20.18 74
July 8.9	57.416 <sup>s</sup> 188	29.60 103	49.092 <sup>s</sup> 251	16.03 101	24.788 <sup>s</sup> 229	19.44 58
18.9	57.604 <sup>s</sup> 212	30.63 100	49.343 <sup>s</sup> 294	15.02 85	25.017 <sup>s</sup> 261	18.86 51
28.9	57.816 <sup>s</sup> 236	31.63 89	49.637 <sup>s</sup> 324	14.17 72	25.278 <sup>s</sup> 294	18.35 38
Aug. 7.9	58.052 <sup>s</sup> 254	32.52 82	49.961 <sup>s</sup> 349	13.45 58	25.572 <sup>s</sup> 311	17.97 32
17.8	58.306 <sup>s</sup> 265	33.34 68	50.310 <sup>s</sup> 368	12.87 39	25.883 <sup>s</sup> 333	17.65 22
27.8	58.571 <sup>s</sup> 277	34.02 50	50.678 <sup>s</sup> 385	12.48 28	26.216 <sup>s</sup> 346	17.43 10
Sept. 6.8	58.848 <sup>s</sup> 282	34.52 30	51.063 <sup>s</sup> 393	12.20 10	26.562 <sup>s</sup> 351	17.33 3
16.8	59.130 <sup>s</sup> 285	34.82 5	51.456 <sup>s</sup> 396	12.10 5	26.913 <sup>s</sup> 355	17.30 3
26.7	59.415 <sup>s</sup> 282	34.87 16	51.852 <sup>s</sup> 395	12.15 19	27.268 <sup>s</sup> 353	17.33 12
Oct. 6.7	59.697 <sup>s</sup> 280	34.71 38	52.247 <sup>s</sup> 387	12.34 37	27.621 <sup>s</sup> 349	17.45 22
16.7	59.977 <sup>s</sup> 269	34.33 58	52.634 <sup>s</sup> 377	12.71 51	27.970 <sup>s</sup> 339	17.67 28
26.6	60.246 <sup>s</sup> 256	33.75 75	53.011 <sup>s</sup> 357	13.22 69	28.309 <sup>s</sup> 321	17.95 39
Nov. 5.6	60.502 <sup>s</sup> 237	33.00 90	53.368 <sup>s</sup> 331	13.91 86	28.630 <sup>s</sup> 301	18.34 49
15.6	60.739 <sup>s</sup> 212	32.10 98	53.699 <sup>s</sup> 299	14.77 101	28.931 <sup>s</sup> 271	18.83 60
25.6	60.951 <sup>s</sup> 182	31.12 101	53.998 <sup>s</sup> 255	15.78 113	29.202 <sup>s</sup> 231	19.43 71
Dec. 5.5	61.133 <sup>s</sup> 148	30.11 102	54.253 <sup>s</sup> 205	16.91 125	29.433 <sup>s</sup> 187	20.14 81
15.5	61.281 <sup>s</sup> 108	29.09 98	54.458 <sup>s</sup> 149	18.16 136	29.620 <sup>s</sup> 140	20.95 85
25.5	61.389 <sup>s</sup> 62	28.11 90	54.607 <sup>s</sup> 86	19.52 138	29.760 <sup>s</sup> 84	21.80 92
35.5	61.451 <sup>s</sup>	27.21	54.693 <sup>s</sup>	20.90	29.844 <sup>s</sup>	22.72
Mean Place	56.922	37.38	48.474	27.97	24.144	30.63
Sec $\delta$ , Tan $\delta$	1.008	+0.130	1.413	+0.998	1.256	+0.759
L $\alpha$ , L $\delta$	0.00	0.0	+0.03	0.0	+0.02	0.0
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+1.0	0.00	+1.0	0.00	+1.0
AUTHORITY	A. E.		A. E.		A. E.	

316 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ι Geminorum. Mag. 4.3		ν Orionis. Mag. 4.4		η Geminorum. Mag. 3.2-4.2								
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.							
	<sup>h</sup> 5 <sup>m</sup> 59	<sup>°</sup> 23 <sup>'</sup> 15	<sup>h</sup> 6 <sup>m</sup> 3	<sup>°</sup> 14 <sup>'</sup> 46	<sup>h</sup> 6 <sup>m</sup> 10	<sup>°</sup> 22 <sup>'</sup> 31							
Jan.	0.5 10.4 20.4 30.4	24.539 24.590 24.589 24.538	51 1 51 97	58.08 58.14 58.26 58.42	6 12 16 17	8.848 8.895 8.898 8.850	47 3 48 93	34.20 33.75 33.40 33.11	45 35 29 20	11.996 12.055 12.064 12.022	59 9 42 91	40.43 40.44 40.52 40.65	1 8 13 15
Feb.	9.4 19.3	24.441 24.303	138 168	58.59 58.74	15 13	8.757 8.631	126 160	32.91 32.77	14 11	11.931 11.804	127 163	40.80 40.96	16 14
Mar.	1.3 11.3 21.2 31.2	24.135 23.944 23.745 23.547	191 199 198 185	58.87 58.94 58.95 58.89	7 1 6 11	8.471 8.291 8.102 7.914	180 189 188 176	32.66 32.62 32.59 32.60	4 3 1 3	11.641 11.455 11.259 11.063	186 196 196 188	41.10 41.20 41.27 41.25	10 7 2 5
Apr.	10.2 20.2 30.1	23.362 23.200 23.070	162 130 92	58.78 58.62 58.44	16 18 20	7.738 7.582 7.453	156 129 89	32.63 32.69 32.81	6 12 18	10.875 10.710 10.576	165 134 100	41.20 41.11 41.01	9 10 14
May	10.1 20.1 30.1	22.978 22.928 22.923	50 5 41	58.24 58.06 57.92	18 14 10	7.364 7.314 7.304	50 10 34	32.99 33.22 33.53	23 31 38	10.476 10.418 10.401	58 17 31	40.87 40.76 40.64	11 12 6
June	9.0 19.0 29.0	22.964 23.049 23.175	85 126 164	57.82 57.77 57.79	5 2 7	7.338 7.412 7.528	74 116 149	33.91 34.36 34.86	45 50 54	10.432 10.504 10.621	72 117 150	40.58 40.57 40.58	1 1 8
July	8.9 18.9 28.9	23.339 23.537 23.765	198 228 251	57.86 57.99 58.15	13 16 19	7.677 7.863 8.073	186 210 237	35.40 35.98 36.56	58 58 56	10.771 10.961 11.176	190 215 245	40.66 40.78 40.94	12 16 15
Aug.	7.9 17.8 27.8	24.016 24.288 24.574	272 286 298	58.34 58.53 58.69	19 16 13	8.310 8.564 8.833	254 269 282	37.12 37.59 38.00	47 41 31	11.421 11.680 11.960	259 280 294	41.09 41.24 41.38	15 14 5
Sept.	6.8 16.8 26.7	24.872 25.177 25.486	305 309 308	58.82 58.89 58.91	7 2 6	9.115 9.405 9.698	290 293 294	38.31 38.48 38.46	17 2 14	12.254 12.553 12.860	299 307 308	41.43 41.44 41.36	1 8 12
Oct.	6.7 16.7 26.6	25.794 26.099 26.396	305 297 284	58.85 58.74 58.58	11 16 20	9.992 10.282 10.565	290 283 273	38.32 38.05 37.60	27 45 51	13.168 13.477 13.778	309 301 287	41.24 41.04 40.80	20 24 30
Nov.	5.6 15.6 25.6	26.680 26.946 27.188	266 242 210	58.38 58.19 58.00	19 19 13	10.838 11.092 11.324	254 232 199	37.09 36.49 35.83	60 66 64	14.065 14.338 14.588	273 250 220	40.50 40.22 39.96	28 26 25
Dec.	5.5 15.5 25.5 35.5	27.398 27.571 27.700 27.782	173 129 82	57.87 57.78 57.76 57.82	9 2 6	11.523 11.691 11.816 11.895	168 125 79	35.19 34.58 34.03 33.55	61 55 48	14.808 14.990 15.129 15.220	182 139 91	39.71 39.54 39.44 39.42	17 10 2
Mean Place Sec δ, Tan δ	22.743 1.089	67.63 +0.430	7.143 1.034	44.37 +0.264	10.212 1.083	50.45 +0.415							
L α, L δ ω α, ω δ	+0.01 0.00	0.0 +1.0	+0.01 0.00	0.0 +1.0	+0.01 0.00	0.0 +1.0							
AUTHORITY			A. E.		A. E.								

# APPARENT PLACES OF STARS, 1922. 317

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\zeta$ Canis Majoris. Mag. 3.1		$\mu$ Geminorum. Mag. 3.2		$\beta$ Canis Majoris. Mag. 2.0		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.	
	<sup>h</sup> 6 <sup>m</sup> 17	<sup>°</sup> 30 <sup>'</sup> 1	<sup>h</sup> 6 <sup>m</sup> 18	<sup>°</sup> 22 <sup>'</sup> 33	<sup>h</sup> 6 <sup>m</sup> 19	<sup>°</sup> 17 <sup>'</sup> 54	
Jan.	0.5 10.4 20.4 30.4	20.843 <sup>23</sup> 20.866 <sup>32</sup> 20.834 <sup>82</sup> 20.752 <sup>127</sup>	53.37 <sup>281</sup> 56.18 <sup>262</sup> 58.80 <sup>231</sup> 61.11 <sup>199</sup>	16.320 <sup>67</sup> 16.387 <sup>17</sup> 16.404 <sup>33</sup> 16.371 <sup>84</sup>	7.49 <sup>0</sup> 7.49 <sup>7</sup> 7.56 <sup>13</sup> 7.69 <sup>17</sup>	17.549 <sup>39</sup> 17.588 <sup>10</sup> 17.578 <sup>57</sup> 17.521 <sup>101</sup>	69.49 <sup>231</sup> 71.80 <sup>211</sup> 73.91 <sup>188</sup> 75.79 <sup>160</sup>
Feb.	9.4 19.3	20.625 <sup>168</sup> 20.457 <sup>198</sup>	63.10 <sup>163</sup> 64.73 <sup>121</sup>	16.287 <sup>121</sup> 16.166 <sup>160</sup>	7.86 <sup>18</sup> 8.04 <sup>17</sup>	17.420 <sup>141</sup> 17.279 <sup>169</sup>	77.39 <sup>131</sup> 78.70 <sup>96</sup>
Mar.	1.3 11.3 21.3 31.2	20.259 <sup>223</sup> 20.036 <sup>234</sup> 19.802 <sup>235</sup> 19.567 <sup>226</sup>	65.94 <sup>79</sup> 66.73 <sup>37</sup> 67.10 <sup>4</sup> 67.06 <sup>47</sup>	16.006 <sup>184</sup> 15.822 <sup>194</sup> 15.628 <sup>196</sup> 15.432 <sup>190</sup>	8.21 <sup>13</sup> 8.34 <sup>10</sup> 8.44 <sup>2</sup> 8.46 <sup>3</sup>	17.110 <sup>191</sup> 16.919 <sup>204</sup> 16.715 <sup>206</sup> 16.509 <sup>196</sup>	79.66 <sup>62</sup> 80.28 <sup>30</sup> 80.58 <sup>6</sup> 80.52 <sup>37</sup>
Apr.	10.2 20.2	19.341 <sup>206</sup> 19.135 <sup>181</sup>	66.59 <sup>89</sup> 65.70 <sup>125</sup>	15.242 <sup>167</sup> 15.075 <sup>139</sup>	8.43 <sup>6</sup> 8.37 <sup>8</sup>	16.313 <sup>179</sup> 16.134 <sup>155</sup>	80.15 <sup>71</sup> 79.44 <sup>101</sup>
May	30.2 10.1 20.1 30.1	18.954 <sup>147</sup> 18.807 <sup>109</sup> 18.698 <sup>66</sup> 18.632 <sup>22</sup>	64.45 <sup>161</sup> 62.84 <sup>193</sup> 60.91 <sup>221</sup> 58.70 <sup>242</sup>	14.936 <sup>104</sup> 14.832 <sup>66</sup> 14.766 <sup>23</sup> 14.743 <sup>23</sup>	8.29 <sup>12</sup> 8.17 <sup>12</sup> 8.05 <sup>11</sup> 7.94 <sup>7</sup>	15.979 <sup>122</sup> 15.857 <sup>86</sup> 15.771 <sup>45</sup> 15.726 <sup>7</sup>	78.43 <sup>129</sup> 77.14 <sup>154</sup> 75.60 <sup>179</sup> 73.81 <sup>196</sup>
June	9.0 19.0 29.0	18.610 <sup>21</sup> 18.631 <sup>66</sup> 18.697 <sup>106</sup>	56.28 <sup>258</sup> 53.70 <sup>269</sup> 51.01 <sup>269</sup>	14.766 <sup>66</sup> 14.832 <sup>107</sup> 14.939 <sup>145</sup>	7.87 <sup>4</sup> 7.83 <sup>1</sup> 7.82 <sup>5</sup>	15.719 <sup>36</sup> 15.755 <sup>75</sup> 15.830 <sup>112</sup>	71.85 <sup>210</sup> 69.75 <sup>220</sup> 67.55 <sup>221</sup>
July	9.0 18.9 28.9	18.803 <sup>145</sup> 18.948 <sup>182</sup> 19.130 <sup>213</sup>	48.32 <sup>266</sup> 45.66 <sup>253</sup> 43.13 <sup>231</sup>	15.084 <sup>179</sup> 15.263 <sup>210</sup> 15.473 <sup>238</sup>	7.87 <sup>9</sup> 7.96 <sup>10</sup> 8.06 <sup>9</sup>	15.942 <sup>147</sup> 16.089 <sup>177</sup> 16.266 <sup>207</sup>	65.34 <sup>218</sup> 63.16 <sup>209</sup> 61.07 <sup>190</sup>
Aug.	7.9 17.9	19.343 <sup>240</sup> 19.583 <sup>261</sup>	40.82 <sup>200</sup> 38.82 <sup>165</sup>	15.711 <sup>256</sup> 15.967 <sup>277</sup>	8.15 <sup>12</sup> 8.27 <sup>6</sup>	16.473 <sup>229</sup> 16.702 <sup>249</sup>	59.17 <sup>167</sup> 57.50 <sup>135</sup>
Sept.	27.8 6.8 16.8 26.7	19.844 <sup>282</sup> 20.126 <sup>294</sup> 20.420 <sup>301</sup> 20.721 <sup>306</sup>	37.17 <sup>120</sup> 35.97 <sup>72</sup> 35.25 <sup>19</sup> 35.06 <sup>35</sup>	16.244 <sup>291</sup> 16.535 <sup>297</sup> 16.832 <sup>307</sup> 17.139 <sup>309</sup>	8.33 <sup>0</sup> 8.33 <sup>5</sup> 8.28 <sup>13</sup> 8.15 <sup>19</sup>	16.951 <sup>264</sup> 17.215 <sup>275</sup> 17.490 <sup>284</sup> 17.774 <sup>286</sup>	56.15 <sup>99</sup> 55.16 <sup>58</sup> 54.58 <sup>14</sup> 54.44 <sup>32</sup>
Oct.	6.7 16.7 26.7	21.027 <sup>303</sup> 21.330 <sup>294</sup> 21.624 <sup>279</sup>	35.41 <sup>90</sup> 36.31 <sup>139</sup> 37.70 <sup>187</sup>	17.448 <sup>311</sup> 17.759 <sup>304</sup> 18.063 <sup>293</sup>	7.96 <sup>27</sup> 7.69 <sup>30</sup> 7.39 <sup>35</sup>	18.060 <sup>286</sup> 18.346 <sup>278</sup> 18.624 <sup>266</sup>	54.76 <sup>78</sup> 55.54 <sup>120</sup> 56.74 <sup>158</sup>
Nov.	5.6 15.6 25.6	21.903 <sup>256</sup> 22.159 <sup>230</sup> 22.389 <sup>190</sup>	39.57 <sup>228</sup> 41.85 <sup>257</sup> 44.42 <sup>281</sup>	18.356 <sup>281</sup> 18.637 <sup>254</sup> 18.891 <sup>227</sup>	7.04 <sup>33</sup> 6.71 <sup>31</sup> 6.40 <sup>30</sup>	18.890 <sup>250</sup> 19.140 <sup>224</sup> 19.364 <sup>193</sup>	58.32 <sup>193</sup> 60.25 <sup>217</sup> 62.42 <sup>236</sup>
Dec.	5.6 15.5 25.5 35.5	22.579 <sup>152</sup> 22.731 <sup>105</sup> 22.836 <sup>53</sup> 22.889	47.23 <sup>294</sup> 50.17 <sup>296</sup> 53.13 <sup>288</sup> 56.01	19.118 <sup>188</sup> 19.306 <sup>148</sup> 19.454 <sup>100</sup> 19.554	6.10 <sup>20</sup> 5.90 <sup>12</sup> 5.78 <sup>3</sup> 5.75	19.557 <sup>157</sup> 19.714 <sup>117</sup> 19.831 <sup>68</sup> 19.899	64.78 <sup>245</sup> 67.23 <sup>245</sup> 69.68 <sup>237</sup> 72.05
Mean Place	19.039	41.67	14.540	17.82	15.863	58.03	
Sec $\delta$ , Tan $\delta$	1.155	-0.578	1.083	+0.415	1.051	-0.323	
L $\alpha$ , L $\delta$	-0.02	0.0	+0.01	0.0	-0.01	0.0	
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+1.0	0.00	+1.0	0.00	+1.0	
AUTHORITY	A. E.		A. E.		A. E.		

# 318 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Argûs. Mag. -0.9		$\nu$ Geminorum. Mag. 4.1		$\gamma$ Geminorum. Mag. 1.9	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 6 <sup>m</sup> 22	<sup>°</sup> 52 <sup>'</sup> 38	<sup>h</sup> 6 <sup>m</sup> 24	<sup>°</sup> 20 <sup>'</sup> 15	<sup>h</sup> 6 <sup>m</sup> 33	<sup>°</sup> 16 <sup>'</sup> 27
Jan. 0.5	15.666 <sup>s</sup> 23	81.19 <sup>s</sup> 346	21.668 <sup>s</sup> 75	35.47 <sup>s</sup> 16	14.107 <sup>s</sup> 81	50.43 <sup>s</sup> 41
10.5	15.643 97	84.65 322	21.743 23	35.31 6	14.188 28	50.02 29
20.4	15.546 164	87.87 291	21.766 28	35.25 1	14.216 19	49.73 20
30.4	15.382 224	90.78 251	21.738 76	35.26 8	14.197 70	49.53 11
Feb. 9.4	15.158 278	93.29 206	21.662 119	35.34 12	14.127 111	49.42 2
19.4	14.880 317	95.35 161	21.543 153	35.46 12	14.016 143	49.40 1
Mar. 1.3	14.563 347	96.96 109	21.390 179	35.58 12	13.873 170	49.41 6
11.3	14.216 363	98.05 55	21.211 192	35.70 10	13.703 188	49.47 7
21.3	13.853 365	98.60 5	21.019 195	35.80 6	13.515 190	49.54 11
31.2	13.488 355	98.65 49	20.824 187	35.86 4	13.325 183	49.65 9
Apr. 10.2	13.133 333	98.16 100	20.637 167	35.90 0	13.142 167	49.74 9
20.2	12.800 301	97.16 144	20.470 141	35.90 1	12.975 140	49.83 12
30.2	12.499 263	95.72 191	20.329 108	35.89 2	12.835 113	49.95 14
May 10.1	12.236 210	93.81 231	20.221 67	35.87 1	12.722 72	50.09 17
20.1	12.026 156	91.50 264	20.154 27	35.86 2	12.650 34	50.26 21
30.1	11.870 100	88.86 292	20.127 17	35.88 5	12.616 6	50.47 26
June 9.1	11.770 37	85.94 308	20.144 59	35.93 8	12.622 51	50.73 28
19.0	11.733 23	82.86 323	20.203 99	36.01 13	12.673 87	51.01 33
29.0	11.756 85	79.63 327	20.302 137	36.14 17	12.760 125	51.34 36
July 9.0	11.841 140	76.36 321	20.439 171	36.31 19	12.885 158	51.70 37
18.9	11.981 198	73.15 307	20.610 202	36.50 19	13.043 188	52.07 35
28.9	12.179 248	70.08 283	20.812 227	36.69 20	13.231 216	52.42 34
Aug. 7.9	12.427 290	67.25 247	21.039 249	36.89 16	13.447 239	52.76 28
17.9	12.717 333	64.78 202	21.288 268	37.05 10	13.686 253	53.04 21
27.8	13.050 363	62.76 153	21.556 281	37.15 4	13.939 272	53.25 7
Sept. 6.8	13.413 387	61.23 96	21.837 293	37.19 5	14.211 285	53.32 3
16.8	13.800 400	60.27 33	22.130 300	37.14 15	14.496 293	53.29 16
26.8	14.200 405	59.94 29	22.430 304	36.99 24	14.789 297	53.13 32
Oct. 6.7	14.605 401	60.23 95	22.734 305	36.75 33	15.086 300	52.81 43
16.7	15.006 385	61.18 156	23.039 300	36.42 41	15.386 297	52.38 54
26.7	15.391 361	62.74 214	23.339 292	36.01 46	15.683 288	51.84 64
Nov. 5.6	15.752 323	64.88 259	23.631 278	35.55 48	15.971 276	51.20 68
15.6	16.075 276	67.47 302	23.909 256	35.07 49	16.247 259	50.52 72
25.6	16.351 222	70.49 333	24.165 229	34.58 43	16.506 230	49.80 68
Dec. 5.6	16.573 159	73.82 349	24.394 194	34.15 38	16.736 196	49.12 64
15.5	16.732 90	77.31 357	24.588 151	33.77 28	16.932 158	48.48 55
25.5	16.822 21	80.88 352	24.739 105	33.49 19	17.090 111	47.93 47
35.5	16.843	84.40	24.844	33.30	17.201	47.46
Mean Place	13.225	69.68	19.919	46.12	12.398	61.42
Sec $\delta$ , Tan $\delta$	1.648	-1.310	1.066	+0.369	1.043	+0.296
L $\alpha$ , L $\delta$	-0.03	0.0	+0.01	0.0	+0.01	-0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+1.0	0.00	+1.0	0.00	+1.0
AUTHORITY	A. E.				A. E.	

# APPARENT PLACES OF STARS, 1922. 319

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\nu$ Argûs. Mag. 3.2		$\epsilon$ Geminorum. Mag. 3.2		$\xi$ Geminorum. Mag. 3.4	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 6 <sup>m</sup> 35	<sup>°</sup> 43 <sup>'</sup> 7	<sup>h</sup> 6 <sup>m</sup> 39	<sup>°</sup> 25 <sup>'</sup> 12	<sup>h</sup> 6 <sup>m</sup> 40	<sup>°</sup> 12 <sup>'</sup> 58
Jan. 0.5	24.691 <sup>s</sup> <sub>20</sub>	47.83 <sub>331</sub>	9.845 <sup>s</sup> <sub>90</sub>	23.82 <sub>10</sub>	56.418 <sup>s</sup> <sub>86</sub>	40.14 <sub>64</sub>
10.5	24.711 <sub>41</sub>	51.14 <sub>310</sub>	9.935 <sub>39</sub>	23.92 <sub>21</sub>	56.504 <sub>35</sub>	39.50 <sub>53</sub>
20.4	24.670 <sub>101</sub>	54.24 <sub>283</sub>	9.974 <sub>13</sub>	24.13 <sub>29</sub>	56.539 <sub>14</sub>	38.97 <sub>40</sub>
30.4	24.569 <sub>156</sub>	57.07 <sub>247</sub>	9.961 <sub>69</sub>	24.42 <sub>38</sub>	56.525 <sub>63</sub>	38.57 <sub>29</sub>
Feb. 9.4	24.413 <sub>205</sub>	59.54 <sub>207</sub>	9.892 <sub>110</sub>	24.80 <sub>35</sub>	56.462 <sub>104</sub>	38.28 <sub>17</sub>
19.4	24.208 <sub>241</sub>	61.61 <sub>163</sub>	9.782 <sub>150</sub>	25.15 <sub>32</sub>	56.358 <sub>140</sub>	38.11 <sub>8</sub>
Mar. 1.3	23.967 <sub>271</sub>	63.24 <sub>114</sub>	9.632 <sub>179</sub>	25.47 <sub>30</sub>	56.218 <sub>166</sub>	38.03 <sub>2</sub>
11.3	23.696 <sub>286</sub>	64.38 <sub>66</sub>	9.453 <sub>193</sub>	25.77 <sub>22</sub>	56.052 <sub>182</sub>	38.01 <sub>4</sub>
21.3	23.410 <sub>291</sub>	65.04 <sub>17</sub>	9.260 <sub>201</sub>	25.99 <sub>16</sub>	55.870 <sub>188</sub>	38.05 <sub>9</sub>
31.2	23.119 <sub>286</sub>	65.21 <sub>31</sub>	9.059 <sub>196</sub>	26.15 <sub>4</sub>	55.682 <sub>182</sub>	38.14 <sub>13</sub>
Apr. 10.2	22.833 <sub>269</sub>	64.90 <sub>80</sub>	8.863 <sub>178</sub>	26.19 <sub>3</sub>	55.500 <sub>168</sub>	38.27 <sub>18</sub>
20.2	22.564 <sub>242</sub>	64.10 <sub>125</sub>	8.685 <sub>154</sub>	26.16 <sub>7</sub>	55.332 <sub>143</sub>	38.45 <sub>21</sub>
30.2	22.322 <sub>206</sub>	62.85 <sub>167</sub>	8.531 <sub>120</sub>	26.09 <sub>16</sub>	55.189 <sub>113</sub>	38.66 <sub>27</sub>
May 10.1	22.116 <sub>169</sub>	61.18 <sub>206</sub>	8.411 <sub>83</sub>	25.93 <sub>20</sub>	55.076 <sub>78</sub>	38.93 <sub>31</sub>
20.1	21.947 <sub>122</sub>	59.12 <sub>239</sub>	8.328 <sub>39</sub>	25.73 <sub>21</sub>	54.998 <sub>41</sub>	39.24 <sub>38</sub>
30.1	21.825 <sub>74</sub>	56.73 <sub>264</sub>	8.289 <sub>2</sub>	25.52 <sub>22</sub>	54.957 <sub>1</sub>	39.62 <sub>42</sub>
June 9.1	21.751 <sub>24</sub>	54.09 <sub>287</sub>	8.291 <sub>49</sub>	25.30 <sub>21</sub>	54.958 <sub>40</sub>	40.04 <sub>46</sub>
19.0	21.727 <sub>27</sub>	51.22 <sub>301</sub>	8.340 <sub>86</sub>	25.09 <sub>20</sub>	54.998 <sub>79</sub>	40.50 <sub>51</sub>
29.0	21.754 <sub>77</sub>	48.21 <sub>306</sub>	8.426 <sub>126</sub>	24.89 <sub>18</sub>	55.077 <sub>114</sub>	41.01 <sub>54</sub>
July 9.0	21.831 <sub>123</sub>	45.15 <sub>303</sub>	8.552 <sub>163</sub>	24.71 <sub>17</sub>	55.191 <sub>148</sub>	41.55 <sub>53</sub>
18.9	21.954 <sub>168</sub>	42.12 <sub>292</sub>	8.715 <sub>195</sub>	24.54 <sub>13</sub>	55.339 <sub>178</sub>	42.08 <sub>52</sub>
28.9	22.122 <sub>210</sub>	39.20 <sub>269</sub>	8.910 <sub>225</sub>	24.41 <sub>13</sub>	55.517 <sub>204</sub>	42.60 <sub>48</sub>
Aug. 7.9	22.332 <sub>246</sub>	36.51 <sub>238</sub>	9.135 <sub>246</sub>	24.28 <sub>16</sub>	55.721 <sub>228</sub>	43.08 <sub>39</sub>
17.9	22.578 <sub>279</sub>	34.13 <sub>199</sub>	9.381 <sub>269</sub>	24.12 <sub>16</sub>	55.949 <sub>246</sub>	43.47 <sub>29</sub>
27.8	22.857 <sub>306</sub>	32.14 <sub>153</sub>	9.650 <sub>287</sub>	23.96 <sub>22</sub>	56.195 <sub>262</sub>	43.76 <sub>14</sub>
Sept. 6.8	23.163 <sub>327</sub>	30.61 <sub>100</sub>	9.937 <sub>297</sub>	23.74 <sub>25</sub>	56.457 <sub>276</sub>	43.90 <sub>1</sub>
16.8	23.490 <sub>343</sub>	29.61 <sub>41</sub>	10.234 <sub>310</sub>	23.49 <sub>28</sub>	56.733 <sub>285</sub>	43.89 <sub>16</sub>
26.8	23.833 <sub>349</sub>	29.20 <sub>20</sub>	10.544 <sub>315</sub>	23.21 <sub>36</sub>	57.018 <sub>292</sub>	43.73 <sub>35</sub>
Oct. 6.7	24.182 <sub>349</sub>	29.40 <sub>82</sub>	10.859 <sub>318</sub>	22.85 <sub>37</sub>	57.310 <sub>295</sub>	43.38 <sub>52</sub>
16.7	24.531 <sub>339</sub>	30.22 <sub>139</sub>	11.177 <sub>317</sub>	22.48 <sub>41</sub>	57.605 <sub>293</sub>	42.86 <sub>66</sub>
26.7	24.870 <sub>324</sub>	31.61 <sub>195</sub>	11.494 <sub>312</sub>	22.07 <sub>39</sub>	57.898 <sub>288</sub>	42.20 <sub>78</sub>
Nov. 5.6	25.194 <sub>299</sub>	33.56 <sub>244</sub>	11.806 <sub>297</sub>	21.68 <sub>38</sub>	58.186 <sub>275</sub>	41.42 <sub>87</sub>
15.6	25.493 <sub>265</sub>	36.00 <sub>283</sub>	12.103 <sub>275</sub>	21.30 <sub>33</sub>	58.461 <sub>258</sub>	40.55 <sub>91</sub>
25.6	25.758 <sub>222</sub>	38.83 <sub>312</sub>	12.378 <sub>252</sub>	20.97 <sub>25</sub>	58.719 <sub>231</sub>	39.64 <sub>91</sub>
Dec. 5.6	25.980 <sub>173</sub>	41.95 <sub>332</sub>	12.630 <sub>214</sub>	20.72 <sub>14</sub>	58.950 <sub>199</sub>	38.73 <sub>88</sub>
15.5	26.153 <sub>118</sub>	45.27 <sub>340</sub>	12.844 <sub>173</sub>	20.58 <sub>2</sub>	59.149 <sub>160</sub>	37.85 <sub>80</sub>
25.5	26.271 <sub>57</sub>	48.67 <sub>335</sub>	13.017 <sub>125</sub>	20.56 <sub>6</sub>	59.309 <sub>116</sub>	37.05 <sub>71</sub>
35.5	26.328	52.02	13.142	20.62	59.425	36.34
Mean Place	22.566	37.04	8.053	34.90	54.738	51.33
Sec $\delta$ , Tan $\delta$	1.370	-0.937	1.105	+0.471	1.026	+0.231
L $\alpha$ , L $\delta$	-0.02	-0.1	+0.01	-0.1	+0.01	-0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+1.0	+0.01	+1.0	0.00	+1.0
AUTHORITY	A. E.		A. E.		A. E.	

# 320 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Canis Majoris. Mag. -1.6		$\alpha$ Pictoris. Mag. 3.3		$\tau$ Argus. Mag. 2.8	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 6 <sup>m</sup> 41	<sup>h</sup> 16 <sup>m</sup> 36	<sup>h</sup> 6 <sup>m</sup> 47	<sup>h</sup> 61 <sup>m</sup> 51	<sup>h</sup> 6 <sup>m</sup> 47	<sup>h</sup> 50 <sup>m</sup> 31
Jan. 0.5	44.213 <sup>s</sup>	41.89 <sup>s</sup>	26.75 <sup>s</sup>	36.78 <sup>s</sup>	62.457 <sup>s</sup>	26.70 <sup>s</sup>
10.5	44.269 <sup>s</sup>	44.25 <sup>s</sup>	26.73 <sup>s</sup>	40.43 <sup>s</sup>	62.481 <sup>s</sup>	30.22 <sup>s</sup>
20.4	44.277 <sup>s</sup>	46.41 <sup>s</sup>	26.62 <sup>s</sup>	43.91 <sup>s</sup>	62.430 <sup>s</sup>	33.56 <sup>s</sup>
30.4	44.238 <sup>s</sup>	48.36 <sup>s</sup>	26.42 <sup>s</sup>	47.13 <sup>s</sup>	62.314 <sup>s</sup>	36.65 <sup>s</sup>
Feb. 9.4	44.153 <sup>s</sup>	50.04 <sup>s</sup>	26.15 <sup>s</sup>	49.98 <sup>s</sup>	62.135 <sup>s</sup>	39.38 <sup>s</sup>
19.4	44.026 <sup>s</sup>	51.39 <sup>s</sup>	25.80 <sup>s</sup>	52.45 <sup>s</sup>	61.902 <sup>s</sup>	41.71 <sup>s</sup>
Mar. 1.3	43.866 <sup>s</sup>	52.45 <sup>s</sup>	25.40 <sup>s</sup>	54.42 <sup>s</sup>	61.623 <sup>s</sup>	43.59 <sup>s</sup>
11.3	43.682 <sup>s</sup>	53.19 <sup>s</sup>	24.95 <sup>s</sup>	55.91 <sup>s</sup>	61.311 <sup>s</sup>	44.98 <sup>s</sup>
21.3	43.484 <sup>s</sup>	53.59 <sup>s</sup>	24.48 <sup>s</sup>	56.87 <sup>s</sup>	60.978 <sup>s</sup>	45.87 <sup>s</sup>
31.2	43.281 <sup>s</sup>	53.66 <sup>s</sup>	24.00 <sup>s</sup>	57.30 <sup>s</sup>	60.636 <sup>s</sup>	46.24 <sup>s</sup>
Apr. 10.2	43.084 <sup>s</sup>	53.42 <sup>s</sup>	23.52 <sup>s</sup>	57.18 <sup>s</sup>	60.297 <sup>s</sup>	46.09 <sup>s</sup>
20.2	42.902 <sup>s</sup>	52.85 <sup>s</sup>	23.06 <sup>s</sup>	56.53 <sup>s</sup>	59.974 <sup>s</sup>	45.44 <sup>s</sup>
30.2	42.742 <sup>s</sup>	51.98 <sup>s</sup>	22.63 <sup>s</sup>	55.37 <sup>s</sup>	59.677 <sup>s</sup>	44.31 <sup>s</sup>
May 10.1	42.613 <sup>s</sup>	50.85 <sup>s</sup>	22.24 <sup>s</sup>	53.75 <sup>s</sup>	59.415 <sup>s</sup>	42.72 <sup>s</sup>
20.1	42.518 <sup>s</sup>	49.46 <sup>s</sup>	21.91 <sup>s</sup>	51.66 <sup>s</sup>	59.195 <sup>s</sup>	40.72 <sup>s</sup>
30.1	42.457 <sup>s</sup>	47.87 <sup>s</sup>	21.64 <sup>s</sup>	49.21 <sup>s</sup>	59.023 <sup>s</sup>	38.34 <sup>s</sup>
June 9.1	42.435 <sup>s</sup>	46.07 <sup>s</sup>	21.44 <sup>s</sup>	46.42 <sup>s</sup>	58.904 <sup>s</sup>	35.66 <sup>s</sup>
19.0	42.455 <sup>s</sup>	44.13 <sup>s</sup>	21.31 <sup>s</sup>	43.38 <sup>s</sup>	58.840 <sup>s</sup>	32.72 <sup>s</sup>
29.0	42.514 <sup>s</sup>	42.10 <sup>s</sup>	21.26 <sup>s</sup>	40.15 <sup>s</sup>	58.833 <sup>s</sup>	29.62 <sup>s</sup>
July 9.0	42.610 <sup>s</sup>	40.03 <sup>s</sup>	21.28 <sup>s</sup>	36.83 <sup>s</sup>	58.882 <sup>s</sup>	26.44 <sup>s</sup>
18.9	42.738 <sup>s</sup>	37.99 <sup>s</sup>	21.39 <sup>s</sup>	33.52 <sup>s</sup>	58.988 <sup>s</sup>	23.26 <sup>s</sup>
28.9	42.899 <sup>s</sup>	36.04 <sup>s</sup>	21.56 <sup>s</sup>	30.30 <sup>s</sup>	59.146 <sup>s</sup>	20.19 <sup>s</sup>
Aug. 7.9	43.091 <sup>s</sup>	34.24 <sup>s</sup>	21.81 <sup>s</sup>	27.27 <sup>s</sup>	59.354 <sup>s</sup>	17.31 <sup>s</sup>
17.9	43.307 <sup>s</sup>	32.67 <sup>s</sup>	22.12 <sup>s</sup>	24.54 <sup>s</sup>	59.608 <sup>s</sup>	14.73 <sup>s</sup>
27.8	43.544 <sup>s</sup>	31.39 <sup>s</sup>	22.49 <sup>s</sup>	22.23 <sup>s</sup>	59.903 <sup>s</sup>	12.54 <sup>s</sup>
Sept. 6.8	43.798 <sup>s</sup>	30.46 <sup>s</sup>	22.91 <sup>s</sup>	20.38 <sup>s</sup>	60.233 <sup>s</sup>	10.81 <sup>s</sup>
16.8	44.065 <sup>s</sup>	29.92 <sup>s</sup>	23.37 <sup>s</sup>	19.10 <sup>s</sup>	60.590 <sup>s</sup>	9.63 <sup>s</sup>
26.8	44.343 <sup>s</sup>	29.78 <sup>s</sup>	23.86 <sup>s</sup>	18.44 <sup>s</sup>	60.968 <sup>s</sup>	9.04 <sup>s</sup>
Oct. 6.7	44.628 <sup>s</sup>	30.11 <sup>s</sup>	24.36 <sup>s</sup>	18.40 <sup>s</sup>	61.357 <sup>s</sup>	9.08 <sup>s</sup>
16.7	44.917 <sup>s</sup>	30.90 <sup>s</sup>	24.87 <sup>s</sup>	19.05 <sup>s</sup>	61.750 <sup>s</sup>	9.76 <sup>s</sup>
26.7	45.200 <sup>s</sup>	32.10 <sup>s</sup>	25.36 <sup>s</sup>	20.35 <sup>s</sup>	62.135 <sup>s</sup>	11.07 <sup>s</sup>
Nov. 5.6	45.474 <sup>s</sup>	33.66 <sup>s</sup>	25.83 <sup>s</sup>	22.25 <sup>s</sup>	62.503 <sup>s</sup>	12.97 <sup>s</sup>
15.6	45.733 <sup>s</sup>	35.59 <sup>s</sup>	26.25 <sup>s</sup>	24.70 <sup>s</sup>	62.842 <sup>s</sup>	15.39 <sup>s</sup>
25.6	45.971 <sup>s</sup>	37.77 <sup>s</sup>	26.61 <sup>s</sup>	27.61 <sup>s</sup>	63.144 <sup>s</sup>	18.26 <sup>s</sup>
Dec. 5.6	46.178 <sup>s</sup>	40.14 <sup>s</sup>	26.91 <sup>s</sup>	30.89 <sup>s</sup>	63.396 <sup>s</sup>	21.47 <sup>s</sup>
15.5	46.353 <sup>s</sup>	42.60 <sup>s</sup>	27.13 <sup>s</sup>	34.42 <sup>s</sup>	63.595 <sup>s</sup>	24.90 <sup>s</sup>
25.5	46.487 <sup>s</sup>	45.07 <sup>s</sup>	27.26 <sup>s</sup>	38.09 <sup>s</sup>	63.726 <sup>s</sup>	28.45 <sup>s</sup>
35.5	46.573 <sup>s</sup>	47.50 <sup>s</sup>	27.30 <sup>s</sup>	41.76 <sup>s</sup>	63.790 <sup>s</sup>	32.01 <sup>s</sup>
Mean Place	42.651	29.52	23.56	27.28	60.023	16.89
Sec $\delta$ , Tan $\delta$	1.044	-0.298	2.120	-1.869	1.573	-1.214
L $\alpha$ , L $\delta$	-0.01	-0.1	-0.05	-0.1	-0.03	-0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+1.0	-0.03	+1.0	-0.02	+1.0
AUTHORITY	A. E.		A. E.		A. N.	

# APPARENT PLACES OF STARS, 1922. 321

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\theta$ Canis Majoris. Mag. 4.3		$\epsilon$ Canis Majoris. Mag. 1.6		$\zeta$ Canis Majoris. Mag. 3.7	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 6 50	<sup>°</sup> 56'	<sup>h</sup> <sup>m</sup> 6 55	28 51	<sup>h</sup> <sup>m</sup> 6 58	27 49
Jan.	0.5 35.661 <sup>s</sup> 75	33.99 <sup>211</sup>	35.454 <sup>64</sup>	64.19 <sup>291</sup>	38.537 <sup>70</sup>	29.90 <sup>288</sup>
	10.5 35.736 <sup>28</sup>	36.10 <sup>195</sup>	35.518 <sup>12</sup>	67.10 <sup>276</sup>	38.607 <sup>17</sup>	32.78 <sup>271</sup>
	20.5 35.764 <sup>22</sup>	38.05 <sup>176</sup>	35.530 <sup>42</sup>	69.86 <sup>251</sup>	38.624 <sup>36</sup>	35.49 <sup>251</sup>
	30.4 35.742 <sup>70</sup>	39.81 <sup>151</sup>	35.488 <sup>90</sup>	72.37 <sup>221</sup>	38.588 <sup>85</sup>	38.00 <sup>219</sup>
Feb.	9.4 35.672 <sup>109</sup>	41.32 <sup>124</sup>	35.398 <sup>136</sup>	74.58 <sup>189</sup>	38.503 <sup>132</sup>	40.19 <sup>186</sup>
	19.4 35.563 <sup>145</sup>	42.56 <sup>94</sup>	35.262 <sup>174</sup>	76.47 <sup>149</sup>	38.371 <sup>168</sup>	42.05 <sup>149</sup>
Mar.	1.3 35.418 <sup>170</sup>	43.50 <sup>66</sup>	35.088 <sup>200</sup>	77.96 <sup>110</sup>	38.203 <sup>197</sup>	43.54 <sup>110</sup>
	11.3 35.248 <sup>187</sup>	44.16 <sup>38</sup>	34.888 <sup>221</sup>	79.06 <sup>70</sup>	38.006 <sup>216</sup>	44.64 <sup>69</sup>
	21.3 35.061 <sup>194</sup>	44.54 <sup>10</sup>	34.667 <sup>225</sup>	79.76 <sup>27</sup>	37.790 <sup>224</sup>	45.33 <sup>29</sup>
	31.3 34.867 <sup>191</sup>	44.64 <sup>19</sup>	34.442 <sup>227</sup>	80.03 <sup>14</sup>	37.566 <sup>222</sup>	45.62 <sup>11</sup>
Apr.	10.2 34.676 <sup>178</sup>	44.45 <sup>47</sup>	34.215 <sup>212</sup>	79.89 <sup>54</sup>	37.344 <sup>210</sup>	45.51 <sup>51</sup>
	20.2 34.498 <sup>159</sup>	43.98 <sup>74</sup>	34.003 <sup>192</sup>	79.35 <sup>93</sup>	37.134 <sup>191</sup>	45.00 <sup>89</sup>
May	30.2 34.339 <sup>131</sup>	43.24 <sup>98</sup>	33.811 <sup>165</sup>	78.42 <sup>130</sup>	36.943 <sup>163</sup>	44.11 <sup>124</sup>
	10.2 34.208 <sup>97</sup>	42.26 <sup>121</sup>	33.646 <sup>132</sup>	77.12 <sup>158</sup>	36.780 <sup>131</sup>	42.87 <sup>158</sup>
	20.1 34.111 <sup>61</sup>	41.05 <sup>141</sup>	33.514 <sup>94</sup>	75.54 <sup>194</sup>	36.649 <sup>94</sup>	41.29 <sup>186</sup>
	30.1 34.050 <sup>25</sup>	39.64 <sup>157</sup>	33.420 <sup>55</sup>	73.60 <sup>218</sup>	36.555 <sup>55</sup>	39.43 <sup>213</sup>
June	9.1 34.025 <sup>14</sup>	38.07 <sup>174</sup>	33.365 <sup>13</sup>	71.42 <sup>237</sup>	36.500 <sup>15</sup>	37.30 <sup>231</sup>
	19.0 34.039 <sup>51</sup>	36.33 <sup>180</sup>	33.352 <sup>25</sup>	69.05 <sup>251</sup>	36.485 <sup>27</sup>	34.99 <sup>246</sup>
	29.0 34.090 <sup>88</sup>	34.53 <sup>187</sup>	33.377 <sup>70</sup>	66.54 <sup>255</sup>	36.512 <sup>66</sup>	32.53 <sup>254</sup>
July	9.0 34.178 <sup>120</sup>	32.66 <sup>185</sup>	33.447 <sup>105</sup>	63.99 <sup>257</sup>	36.578 <sup>104</sup>	29.99 <sup>253</sup>
	19.0 34.298 <sup>152</sup>	30.81 <sup>178</sup>	33.552 <sup>145</sup>	61.42 <sup>249</sup>	36.682 <sup>141</sup>	26.46 <sup>246</sup>
	28.9 34.450 <sup>181</sup>	29.03 <sup>167</sup>	33.697 <sup>177</sup>	58.93 <sup>233</sup>	36.823 <sup>173</sup>	25.00 <sup>229</sup>
Aug.	7.9 34.631 <sup>205</sup>	27.36 <sup>145</sup>	33.874 <sup>206</sup>	56.60 <sup>209</sup>	36.996 <sup>204</sup>	22.71 <sup>205</sup>
	17.9 34.836 <sup>228</sup>	25.91 <sup>122</sup>	34.080 <sup>235</sup>	54.51 <sup>177</sup>	37.200 <sup>231</sup>	20.66 <sup>175</sup>
Sept.	27.8 35.064 <sup>245</sup>	24.69 <sup>89</sup>	34.315 <sup>259</sup>	52.74 <sup>138</sup>	37.431 <sup>254</sup>	18.91 <sup>134</sup>
	6.8 35.309 <sup>260</sup>	23.80 <sup>53</sup>	34.574 <sup>277</sup>	51.36 <sup>89</sup>	37.685 <sup>273</sup>	17.57 <sup>92</sup>
	16.8 35.569 <sup>274</sup>	23.27 <sup>16</sup>	34.851 <sup>294</sup>	50.47 <sup>40</sup>	37.958 <sup>289</sup>	16.65 <sup>41</sup>
	26.8 35.843 <sup>281</sup>	23.11 <sup>26</sup>	35.145 <sup>301</sup>	50.07 <sup>9</sup>	38.247 <sup>300</sup>	16.24 <sup>11</sup>
Oct.	6.7 36.124 <sup>285</sup>	23.37 <sup>66</sup>	35.446 <sup>308</sup>	50.16 <sup>67</sup>	38.547 <sup>305</sup>	16.35 <sup>64</sup>
	16.7 36.409 <sup>284</sup>	24.03 <sup>105</sup>	35.754 <sup>306</sup>	50.83 <sup>118</sup>	38.852 <sup>304</sup>	16.99 <sup>115</sup>
	26.7 36.693 <sup>279</sup>	25.08 <sup>141</sup>	36.060 <sup>295</sup>	52.01 <sup>166</sup>	39.156 <sup>297</sup>	18.14 <sup>164</sup>
Nov.	5.7 36.972 <sup>268</sup>	26.49 <sup>171</sup>	36.355 <sup>285</sup>	53.67 <sup>207</sup>	39.453 <sup>284</sup>	19.78 <sup>207</sup>
	15.6 37.240 <sup>248</sup>	28.20 <sup>196</sup>	36.640 <sup>261</sup>	55.74 <sup>245</sup>	39.737 <sup>262</sup>	21.85 <sup>242</sup>
	25.6 37.488 <sup>223</sup>	30.16 <sup>212</sup>	36.901 <sup>229</sup>	58.19 <sup>273</sup>	39.999 <sup>231</sup>	24.27 <sup>269</sup>
Dec.	5.6 37.711 <sup>187</sup>	32.28 <sup>220</sup>	37.130 <sup>189</sup>	60.92 <sup>290</sup>	40.230 <sup>196</sup>	26.96 <sup>287</sup>
	15.5 37.898 <sup>151</sup>	34.48 <sup>224</sup>	37.319 <sup>149</sup>	63.82 <sup>299</sup>	40.426 <sup>151</sup>	29.83 <sup>294</sup>
	25.5 38.049 <sup>105</sup>	36.72 <sup>217</sup>	37.468 <sup>97</sup>	66.81 <sup>295</sup>	40.577 <sup>102</sup>	32.77 <sup>291</sup>
	35.5 38.154	38.89	37.565	69.76	40.679	35.68
Mean Place	33.987	23.17	33.604	54.10	36.701	19.89
Sec $\delta$ , Tan $\delta$	1.022	-0.211	1.142	-0.551	1.131	-0.528
L $\alpha$ , L $\delta$	-0.01	-0.1	-0.01	-0.1	-0.01	-0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+1.0	-0.01	+1.0	-0.01	+1.0
AUTHORITY	A. E.		A. E.		Y	

# 322 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ζ Geminorum. Mag. 3.7-4.3		ο <sup>a</sup> Canis Majoris. Mag. 3.1		γ Canis Majoris. Mag. 4.1	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 6 59	<sup>°</sup> <sup>'</sup> 20 40	<sup>h</sup> <sup>m</sup> 6 59	<sup>°</sup> <sup>'</sup> 23 43	<sup>h</sup> <sup>m</sup> 7 0	<sup>°</sup> <sup>'</sup> 15 31
Jan. 0.5	30.762 <sup>s</sup> 108	57.64 <sup>s</sup> 21	47.820 <sup>s</sup> 76	16.64 <sup>s</sup> 271	15.493 <sup>s</sup> 83	11.80 <sup>s</sup> 232
10.5	30.870 59	57.43 8	47.896 23	19.35 256	15.576 33	14.12 216
20.5	30.929 3	57.35 5	47.919 27	21.91 232	15.609 16	16.29 196
30.4	30.932 44	57.40 12	47.892 77	24.23 205	15.593 65	18.25 171
Feb. 9.4	30.888 96	57.52 20	47.815 121	26.28 172	15.528 107	19.96 141
19.4	30.792 130	57.72 22	47.694 158	28.00 138	15.421 144	21.37 112
Mar. 1.4	30.662 162	57.94 25	47.536 185	29.38 101	15.277 170	22.49 80
11.3	30.500 183	58.19 24	47.351 206	30.39 63	15.107 189	23.29 49
21.3	30.317 192	58.43 20	47.145 213	31.02 26	14.918 197	23.78 17
31.3	30.125 187	58.63 16	46.932 211	31.28 12	14.721 195	23.95 13
Apr. 10.2	29.938 179	58.79 16	46.721 200	31.16 49	14.526 185	23.82 45
20.2	29.759 156	58.95 8	46.521 181	30.67 83	14.341 164	23.37 75
30.2	29.603 126	59.03 5	46.340 154	29.84 117	14.177 139	22.62 101
May 10.2	29.477 95	59.08 3	46.186 122	28.67 147	14.038 109	21.61 127
20.1	29.382 54	59.11 2	46.064 86	27.20 176	13.929 72	20.34 150
30.1	29.328 13	59.13 3	45.978 48	25.44 198	13.857 37	18.84 167
June 9.1	29.315 24	59.16 3	45.930 9	23.46 217	13.820 2	17.17 185
19.1	29.339 65	59.19 2	45.921 31	21.29 230	13.822 39	15.32 194
29.0	29.404 103	59.21 3	45.952 69	18.99 237	13.861 77	13.38 201
July 9.0	29.507 139	59.24 4	46.021 106	16.62 236	13.938 109	11.37 200
19.0	29.646 169	59.28 2	46.127 140	14.26 230	14.047 143	9.37 194
28.9	29.815 198	59.30 0	46.267 171	11.96 214	14.190 171	7.43 181
Aug. 7.9	30.013 226	59.30 7	46.438 201	9.82 192	14.361 199	5.62 160
17.9	30.239 243	59.23 10	46.639 226	7.90 161	14.560 221	4.02 134
27.9	30.482 265	59.13 19	46.865 248	6.29 125	14.781 243	2.68 101
Sept. 6.8	30.747 280	58.94 27	47.113 267	5.04 83	15.024 258	1.67 64
16.8	31.027 295	58.67 41	47.380 282	4.21 35	15.282 273	1.03 22
26.8	31.322 303	58.26 46	47.662 291	3.86 13	15.555 282	0.81 19
Oct. 6.8	31.625 309	57.80 59	47.953 298	3.99 65	15.837 290	1.00 66
16.7	31.934 312	57.21 62	48.251 298	4.64 112	16.127 289	1.66 106
26.7	32.246 308	56.59 69	48.549 292	5.76 158	16.416 285	2.72 145
Nov. 5.7	32.554 300	55.90 67	48.841 279	7.34 199	16.701 273	4.17 180
15.6	32.854 282	55.23 65	49.120 259	9.33 231	16.974 256	5.97 207
25.6	33.136 259	54.58 60	49.379 231	11.64 256	17.230 229	8.04 227
Dec. 5.6	33.395 226	53.98 51	49.610 195	14.20 271	17.459 197	10.31 239
15.6	33.621 185	53.47 40	49.805 154	16.91 278	17.656 158	12.70 242
25.5	33.806 143	53.07 27	49.959 106	19.69 274	17.814 113	15.12 238
35.5	33.949	52.80	50.065	22.43	17.927	17.50
Mean Place	29.050	69.36	46.040	6.50	13.794	1.32
Sec δ, Tan δ	1.069	+0.378	1.092	-0.439	1.038	-0.278
L α, L δ	+0.01	-0.1	-0.01	-0.1	-0.01	-0.1
ω α, ω δ	+0.01	+1.0	-0.01	+1.0	0.00	+1.0
AUTHORITY	A. E.		A. N.		A. E.	



# APPARENT PLACES OF STARS, 1922. 323

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\delta$ Canis Majoris. Mag. 2.0		51 Geminorum. Mag. 5.3		$\pi$ Argûs. Mag. 2.7	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 7 <sup>m</sup> 5	<sup>°</sup> 26 <sup>'</sup> 16	<sup>h</sup> 7 <sup>m</sup> 8	<sup>°</sup> 16 <sup>'</sup> 17	<sup>h</sup> 7 <sup>m</sup> 14	<sup>°</sup> 36 <sup>'</sup> 57
Jan. 0.5	14.939 <sub>76</sub>	16.24 <sub>284</sub>	55.319 <sub>117</sub>	21.33 <sub>52</sub>	25.304 <sub>77</sub>	33.63 <sub>326</sub>
10.5	15.015 <sub>28</sub>	19.08 <sub>268</sub>	55.436 <sub>66</sub>	20.81 <sub>37</sub>	25.381 <sub>21</sub>	36.89 <sub>312</sub>
20.5	15.043 <sub>28</sub>	21.76 <sub>246</sub>	55.502 <sub>13</sub>	20.44 <sub>23</sub>	25.402 <sub>38</sub>	40.01 <sub>290</sub>
30.4	15.015 <sub>76</sub>	24.22 <sub>219</sub>	55.515 <sub>36</sub>	20.21 <sub>11</sub>	25.364 <sub>91</sub>	42.91 <sub>262</sub>
Feb. 9.4	14.939 <sub>121</sub>	26.41 <sub>184</sub>	55.479 <sub>85</sub>	20.10 <sub>0</sub>	25.273 <sub>142</sub>	45.53 <sub>225</sub>
19.4	14.818 <sub>160</sub>	28.25 <sub>149</sub>	55.394 <sub>123</sub>	20.10 <sub>8</sub>	25.131 <sub>185</sub>	47.78 <sub>186</sub>
Mar. 1.4	14.658 <sub>189</sub>	29.74 <sub>112</sub>	55.271 <sub>154</sub>	20.18 <sub>14</sub>	24.946 <sub>217</sub>	49.64 <sub>145</sub>
11.3	14.469 <sub>208</sub>	30.86 <sub>72</sub>	55.117 <sub>175</sub>	20.32 <sub>18</sub>	24.729 <sub>240</sub>	51.09 <sub>101</sub>
21.3	14.261 <sub>218</sub>	31.58 <sub>34</sub>	54.942 <sub>186</sub>	20.50 <sub>20</sub>	24.489 <sub>251</sub>	52.10 <sub>54</sub>
31.3	14.043 <sub>217</sub>	31.92 <sub>6</sub>	54.756 <sub>185</sub>	20.70 <sub>20</sub>	24.238 <sub>253</sub>	52.64 <sub>9</sub>
Apr. 10.2	13.826 <sub>207</sub>	31.86 <sub>47</sub>	54.571 <sub>174</sub>	20.90 <sub>20</sub>	23.985 <sub>244</sub>	52.73 <sub>36</sub>
20.2	13.619 <sub>189</sub>	31.39 <sub>83</sub>	54.397 <sub>155</sub>	21.10 <sub>20</sub>	23.741 <sub>224</sub>	52.37 <sub>82</sub>
30.2	13.430 <sub>161</sub>	30.56 <sub>118</sub>	54.242 <sub>129</sub>	21.30 <sub>21</sub>	23.517 <sub>201</sub>	51.55 <sub>122</sub>
May 10.2	13.269 <sub>131</sub>	29.38 <sub>148</sub>	54.113 <sub>96</sub>	21.51 <sub>21</sub>	23.316 <sub>169</sub>	50.33 <sub>159</sub>
20.1	13.138 <sub>96</sub>	27.90 <sub>180</sub>	54.017 <sub>60</sub>	21.72 <sub>22</sub>	23.147 <sub>131</sub>	48.74 <sub>196</sub>
30.1	13.042 <sub>58</sub>	26.10 <sub>204</sub>	53.957 <sub>22</sub>	21.94 <sub>24</sub>	23.016 <sub>91</sub>	46.78 <sub>226</sub>
June 9.1	12.984 <sub>18</sub>	24.06 <sub>224</sub>	53.935 <sub>17</sub>	22.18 <sub>25</sub>	22.925 <sub>47</sub>	44.52 <sub>248</sub>
19.1	12.966 <sub>21</sub>	21.82 <sub>239</sub>	53.952 <sub>54</sub>	22.43 <sub>27</sub>	22.878 <sub>6</sub>	42.04 <sub>268</sub>
29.0	12.987 <sub>62</sub>	19.43 <sub>245</sub>	54.006 <sub>91</sub>	22.70 <sub>27</sub>	22.872 <sub>39</sub>	39.36 <sub>280</sub>
July 9.0	13.049 <sub>99</sub>	16.98 <sub>245</sub>	54.097 <sub>125</sub>	22.97 <sub>27</sub>	22.911 <sub>82</sub>	36.56 <sub>280</sub>
19.0	13.148 <sub>133</sub>	14.53 <sub>239</sub>	54.222 <sub>157</sub>	23.24 <sub>23</sub>	22.993 <sub>121</sub>	33.76 <sub>276</sub>
28.9	13.281 <sub>167</sub>	12.14 <sub>223</sub>	54.379 <sub>185</sub>	23.47 <sub>19</sub>	23.114 <sub>161</sub>	31.00 <sub>263</sub>
Aug. 7.9	13.448 <sub>197</sub>	9.91 <sub>202</sub>	54.564 <sub>209</sub>	23.66 <sub>12</sub>	23.275 <sub>199</sub>	28.37 <sub>237</sub>
17.9	13.645 <sub>226</sub>	7.89 <sub>171</sub>	54.773 <sub>233</sub>	23.78 <sub>2</sub>	23.474 <sub>230</sub>	26.00 <sub>205</sub>
27.9	13.871 <sub>248</sub>	6.18 <sub>133</sub>	55.006 <sub>251</sub>	23.80 <sub>8</sub>	23.704 <sub>259</sub>	23.95 <sub>166</sub>
Sept. 6.8	14.119 <sub>268</sub>	4.85 <sub>89</sub>	55.257 <sub>268</sub>	23.72 <sub>22</sub>	23.963 <sub>286</sub>	22.29 <sub>118</sub>
16.8	14.387 <sub>285</sub>	3.96 <sub>45</sub>	55.525 <sub>282</sub>	23.50 <sub>36</sub>	24.249 <sub>305</sub>	21.11 <sub>65</sub>
26.8	14.672 <sub>298</sub>	3.51 <sub>6</sub>	55.807 <sub>293</sub>	23.14 <sub>50</sub>	24.554 <sub>321</sub>	20.46 <sub>10</sub>
Oct. 6.8	14.970 <sub>302</sub>	3.57 <sub>64</sub>	56.100 <sub>301</sub>	22.64 <sub>64</sub>	24.875 <sub>330</sub>	20.36 <sub>50</sub>
16.7	15.272 <sub>304</sub>	4.21 <sub>112</sub>	56.401 <sub>304</sub>	22.00 <sub>75</sub>	25.205 <sub>331</sub>	20.86 <sub>108</sub>
26.7	15.576 <sub>297</sub>	5.33 <sub>159</sub>	56.705 <sub>303</sub>	21.25 <sub>85</sub>	25.536 <sub>325</sub>	21.94 <sub>161</sub>
Nov. 5.7	15.873 <sub>284</sub>	6.92 <sub>201</sub>	57.008 <sub>296</sub>	20.40 <sub>89</sub>	25.861 <sub>311</sub>	23.55 <sub>213</sub>
15.6	16.157 <sub>263</sub>	8.93 <sub>237</sub>	57.304 <sub>280</sub>	19.51 <sub>91</sub>	26.172 <sub>287</sub>	25.68 <sub>253</sub>
25.6	16.420 <sub>239</sub>	11.30 <sub>262</sub>	57.584 <sub>259</sub>	18.60 <sub>87</sub>	26.459 <sub>256</sub>	28.21 <sub>288</sub>
Dec. 5.6	16.659 <sub>200</sub>	13.92 <sub>281</sub>	57.843 <sub>229</sub>	17.73 <sub>81</sub>	26.715 <sub>214</sub>	31.09 <sub>311</sub>
15.6	16.859 <sub>159</sub>	16.73 <sub>288</sub>	58.072 <sub>191</sub>	16.92 <sub>71</sub>	26.929 <sub>167</sub>	34.20 <sub>325</sub>
25.5	17.018 <sub>110</sub>	19.61 <sub>287</sub>	58.263 <sub>147</sub>	16.21 <sub>58</sub>	27.096 <sub>115</sub>	37.45 <sub>326</sub>
35.5	17.128	22.48	58.410	15.63	27.211	40.71
Mean Place	13.122	6.45	53.656	33.16	23.275	24.92
Sec $\delta$ , Tan $\delta$	1.115	-0.494	1.042	+0.292	1.251	-0.752
L $\alpha$ , L $\delta$	-0.01	-0.1	+0.01	-0.1	-0.02	-0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+1.0	+0.01	+1.0	-0.02	+0.9
AUTHORITY	A. E.		A. E.		A. E.	

# 324 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	♋ Geminorum. Mag. 3.5		♌ Volantis. Mag. 4.0		♐ Canis Majoris. Mag. 2.4	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 7 <sup>m</sup> 15	<sup>°</sup> 22 <sup>'</sup> 7	<sup>h</sup> 7 <sup>m</sup> 16	<sup>°</sup> 67 <sup>'</sup> 48	<sup>h</sup> 7 <sup>m</sup> 21	<sup>°</sup> 29 <sup>'</sup> 8
Jan. 0.5	29.708 <sup>127</sup>	25.70 <sup>16</sup>	56.92 <sup>2</sup>	59.17 <sup>377</sup>	2.444 <sup>94</sup>	68.93 <sup>299</sup>
10.5	29.835 <sup>75</sup>	25.54 <sup>0</sup>	56.94 <sup>8</sup>	62.94 <sup>366</sup>	2.538 <sup>40</sup>	71.92 <sup>286</sup>
20.5	29.910 <sup>21</sup>	25.54 <sup>10</sup>	56.86 <sup>20</sup>	66.60 <sup>347</sup>	2.578 <sup>14</sup>	74.78 <sup>265</sup>
30.4	29.931 <sup>32</sup>	25.64 <sup>19</sup>	56.66 <sup>31</sup>	70.07 <sup>319</sup>	2.564 <sup>67</sup>	77.43 <sup>237</sup>
Feb. 9.4	29.899 <sup>80</sup>	25.83 <sup>28</sup>	56.35 <sup>39</sup>	73.26 <sup>282</sup>	2.497 <sup>114</sup>	79.80 <sup>206</sup>
19.4	29.819 <sup>121</sup>	26.11 <sup>36</sup>	55.96 <sup>47</sup>	76.08 <sup>242</sup>	2.383 <sup>155</sup>	81.86 <sup>169</sup>
Mar. 1.4	29.698 <sup>155</sup>	26.47 <sup>35</sup>	55.49 <sup>53</sup>	78.50 <sup>193</sup>	2.228 <sup>186</sup>	83.55 <sup>130</sup>
11.3	29.543 <sup>180</sup>	26.82 <sup>32</sup>	54.96 <sup>58</sup>	80.43 <sup>145</sup>	2.042 <sup>210</sup>	84.85 <sup>91</sup>
21.3	29.363 <sup>190</sup>	27.14 <sup>30</sup>	54.38 <sup>60</sup>	81.88 <sup>89</sup>	1.832 <sup>222</sup>	85.76 <sup>49</sup>
31.3	29.173 <sup>190</sup>	27.44 <sup>23</sup>	53.78 <sup>60</sup>	82.77 <sup>38</sup>	1.610 <sup>226</sup>	86.25 <sup>8</sup>
Apr. 10.3	28.983 <sup>181</sup>	27.67 <sup>17</sup>	53.18 <sup>60</sup>	83.15 <sup>16</sup>	1.384 <sup>213</sup>	86.33 <sup>32</sup>
20.2	28.802 <sup>163</sup>	27.84 <sup>15</sup>	52.58 <sup>57</sup>	82.99 <sup>72</sup>	1.171 <sup>199</sup>	86.01 <sup>71</sup>
30.2	28.639 <sup>136</sup>	27.99 <sup>6</sup>	52.01 <sup>53</sup>	82.27 <sup>120</sup>	0.972 <sup>177</sup>	85.30 <sup>108</sup>
May 10.2	28.503 <sup>103</sup>	28.05 <sup>1</sup>	51.48 <sup>48</sup>	81.07 <sup>168</sup>	0.795 <sup>146</sup>	84.22 <sup>143</sup>
20.1	28.400 <sup>68</sup>	28.06 <sup>2</sup>	51.00 <sup>41</sup>	79.39 <sup>212</sup>	0.649 <sup>113</sup>	82.79 <sup>175</sup>
30.1	28.332 <sup>28</sup>	28.04 <sup>5</sup>	50.59 <sup>33</sup>	77.27 <sup>250</sup>	0.536 <sup>75</sup>	81.04 <sup>201</sup>
June 9.1	28.304 <sup>11</sup>	27.99 <sup>7</sup>	50.26 <sup>25</sup>	74.77 <sup>283</sup>	0.461 <sup>37</sup>	79.03 <sup>225</sup>
19.1	28.315 <sup>52</sup>	27.92 <sup>8</sup>	50.01 <sup>16</sup>	71.94 <sup>306</sup>	0.424 <sup>3</sup>	76.78 <sup>241</sup>
29.0	28.367 <sup>88</sup>	27.84 <sup>7</sup>	49.85 <sup>6</sup>	68.88 <sup>323</sup>	0.427 <sup>42</sup>	74.37 <sup>251</sup>
July 9.0	28.455 <sup>123</sup>	27.77 <sup>11</sup>	49.79 <sup>2</sup>	65.65 <sup>329</sup>	0.469 <sup>80</sup>	71.86 <sup>253</sup>
19.0	28.578 <sup>155</sup>	27.66 <sup>12</sup>	49.81 <sup>13</sup>	62.36 <sup>328</sup>	0.549 <sup>118</sup>	69.33 <sup>249</sup>
29.0	28.733 <sup>187</sup>	27.54 <sup>15</sup>	49.94 <sup>22</sup>	59.08 <sup>315</sup>	0.667 <sup>152</sup>	66.84 <sup>236</sup>
Aug. 7.9	28.920 <sup>212</sup>	27.39 <sup>20</sup>	50.16 <sup>31</sup>	55.93 <sup>291</sup>	0.819 <sup>184</sup>	64.48 <sup>214</sup>
17.9	29.132 <sup>237</sup>	27.19 <sup>27</sup>	50.47 <sup>39</sup>	53.02 <sup>259</sup>	1.003 <sup>214</sup>	62.34 <sup>185</sup>
27.9	29.369 <sup>256</sup>	26.92 <sup>34</sup>	50.86 <sup>46</sup>	50.43 <sup>214</sup>	1.217 <sup>241</sup>	60.49 <sup>148</sup>
Sept. 6.8	29.625 <sup>275</sup>	26.58 <sup>42</sup>	51.32 <sup>53</sup>	48.29 <sup>164</sup>	1.458 <sup>264</sup>	59.01 <sup>104</sup>
16.8	29.900 <sup>292</sup>	26.16 <sup>54</sup>	51.85 <sup>57</sup>	46.65 <sup>105</sup>	1.722 <sup>283</sup>	57.97 <sup>56</sup>
26.8	30.192 <sup>303</sup>	25.62 <sup>59</sup>	52.42 <sup>61</sup>	45.60 <sup>42</sup>	2.005 <sup>299</sup>	57.41 <sup>4</sup>
Oct. 6.8	30.495 <sup>313</sup>	25.03 <sup>65</sup>	53.03 <sup>62</sup>	45.18 <sup>24</sup>	2.304 <sup>308</sup>	57.37 <sup>50</sup>
16.7	30.808 <sup>316</sup>	24.38 <sup>74</sup>	53.65 <sup>62</sup>	45.42 <sup>91</sup>	2.612 <sup>311</sup>	57.87 <sup>103</sup>
26.7	31.124 <sup>316</sup>	23.64 <sup>74</sup>	54.27 <sup>60</sup>	46.33 <sup>155</sup>	2.923 <sup>309</sup>	58.90 <sup>154</sup>
Nov. 5.7	31.440 <sup>309</sup>	22.90 <sup>76</sup>	54.87 <sup>55</sup>	47.88 <sup>215</sup>	3.232 <sup>299</sup>	60.44 <sup>199</sup>
15.7	31.749 <sup>296</sup>	22.14 <sup>69</sup>	55.42 <sup>48</sup>	50.03 <sup>267</sup>	3.531 <sup>279</sup>	62.43 <sup>237</sup>
25.6	32.045 <sup>271</sup>	21.45 <sup>62</sup>	55.90 <sup>41</sup>	52.70 <sup>310</sup>	3.810 <sup>253</sup>	64.80 <sup>268</sup>
Dec. 5.6	32.316 <sup>245</sup>	20.83 <sup>52</sup>	56.31 <sup>32</sup>	55.80 <sup>344</sup>	4.063 <sup>217</sup>	67.48 <sup>288</sup>
15.6	32.561 <sup>203</sup>	20.31 <sup>36</sup>	56.63 <sup>21</sup>	59.24 <sup>364</sup>	4.280 <sup>175</sup>	70.36 <sup>300</sup>
25.5	32.764 <sup>159</sup>	19.95 <sup>26</sup>	56.84 <sup>9</sup>	62.88 <sup>374</sup>	4.455 <sup>126</sup>	73.36 <sup>300</sup>
35.5	32.923	19.69	56.93	66.62	4.581	76.36
Mean Place	28.016	37.93	52.86	52.36	0.575	60.04
Sec δ, Tan δ	1.080	+0.407	2.649	-2.452	1.145	-0.558
L α, L δ	+0.01	-0.1	-0.06	-0.1	-0.01	-0.1
ω α, ω δ	+0.01	+0.9	-0.05	+0.9	-0.01	+0.9
AUTHORITY	A. E.		A. E.		A. N.	

APPARENT PLACES OF STARS, 1922. 325

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Canis Minoris. Mag. 3.1		$\sigma$ Argûs. Mag. 3.3		$\alpha$ Geminorum. Mag. 2.0	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 7 <sup>m</sup> 22	<sup>°</sup> 8 <sup>'</sup> 26	<sup>h</sup> 7 <sup>m</sup> 26	<sup>°</sup> 43 <sup>'</sup> 8	<sup>h</sup> 7 <sup>m</sup> 29	<sup>°</sup> 32 <sup>'</sup> 3
Jan. 0.5	56.937 <sup>125</sup>	39.68 <sup>103</sup>	47.525 <sup>90</sup>	41.71 <sup>346</sup>	39.329 <sup>151</sup>	27.29 <sup>42</sup>
10.5	57.062 <sup>71</sup>	38.65 <sup>89</sup>	47.615 <sup>26</sup>	45.17 <sup>335</sup>	39.480 <sup>99</sup>	27.71 <sup>57</sup>
20.5	57.133 <sup>25</sup>	37.76 <sup>71</sup>	47.641 <sup>37</sup>	48.52 <sup>315</sup>	39.579 <sup>37</sup>	28.28 <sup>70</sup>
30.5	57.158 <sup>28</sup>	37.05 <sup>56</sup>	47.604 <sup>97</sup>	51.67 <sup>287</sup>	39.616 <sup>21</sup>	28.98 <sup>78</sup>
Feb. 9.4	57.130 <sup>71</sup>	36.49 <sup>39</sup>	47.507 <sup>152</sup>	54.54 <sup>253</sup>	39.595 <sup>76</sup>	29.76 <sup>81</sup>
19.4	57.059 <sup>112</sup>	36.10 <sup>25</sup>	47.355 <sup>198</sup>	57.07 <sup>213</sup>	39.519 <sup>125</sup>	30.57 <sup>82</sup>
Mar. 1.4	56.947 <sup>144</sup>	35.85 <sup>10</sup>	47.157 <sup>236</sup>	59.20 <sup>169</sup>	39.394 <sup>159</sup>	31.39 <sup>74</sup>
11.3	56.803 <sup>163</sup>	35.75 <sup>2</sup>	46.921 <sup>262</sup>	60.89 <sup>123</sup>	39.235 <sup>190</sup>	32.13 <sup>62</sup>
21.3	56.640 <sup>178</sup>	35.77 <sup>10</sup>	46.659 <sup>278</sup>	62.12 <sup>76</sup>	39.045 <sup>204</sup>	32.75 <sup>52</sup>
31.3	56.462 <sup>179</sup>	35.87 <sup>19</sup>	46.381 <sup>281</sup>	62.88 <sup>27</sup>	38.841 <sup>207</sup>	33.27 <sup>35</sup>
Apr. 10.3	56.283 <sup>171</sup>	36.06 <sup>28</sup>	46.100 <sup>275</sup>	63.15 <sup>21</sup>	38.634 <sup>202</sup>	33.62 <sup>19</sup>
20.2	56.112 <sup>155</sup>	36.34 <sup>36</sup>	45.825 <sup>259</sup>	62.94 <sup>68</sup>	38.432 <sup>183</sup>	33.81 <sup>2</sup>
30.2	55.957 <sup>131</sup>	36.70 <sup>42</sup>	45.566 <sup>234</sup>	62.26 <sup>113</sup>	38.249 <sup>161</sup>	33.83 <sup>14</sup>
May 10.2	55.826 <sup>106</sup>	37.12 <sup>49</sup>	45.332 <sup>202</sup>	61.13 <sup>154</sup>	38.088 <sup>123</sup>	33.69 <sup>25</sup>
20.2	55.720 <sup>68</sup>	37.61 <sup>56</sup>	45.130 <sup>166</sup>	59.59 <sup>194</sup>	37.965 <sup>86</sup>	33.44 <sup>42</sup>
30.1	55.652 <sup>35</sup>	38.17 <sup>61</sup>	44.964 <sup>124</sup>	57.65 <sup>228</sup>	37.879 <sup>48</sup>	33.02 <sup>50</sup>
June 9.1	55.617 <sup>2</sup>	38.78 <sup>65</sup>	44.840 <sup>79</sup>	55.37 <sup>255</sup>	37.831 <sup>5</sup>	32.52 <sup>59</sup>
19.1	55.619 <sup>37</sup>	39.43 <sup>68</sup>	44.761 <sup>34</sup>	52.82 <sup>277</sup>	37.826 <sup>41</sup>	31.93 <sup>65</sup>
29.0	55.656 <sup>73</sup>	40.11 <sup>69</sup>	44.727 <sup>14</sup>	50.05 <sup>291</sup>	37.867 <sup>77</sup>	31.28 <sup>70</sup>
July 9.0	55.729 <sup>104</sup>	40.80 <sup>68</sup>	44.741 <sup>60</sup>	47.14 <sup>297</sup>	37.944 <sup>117</sup>	30.58 <sup>73</sup>
19.0	55.833 <sup>136</sup>	41.48 <sup>64</sup>	44.801 <sup>106</sup>	44.17 <sup>294</sup>	38.061 <sup>155</sup>	29.85 <sup>75</sup>
29.0	55.969 <sup>164</sup>	42.12 <sup>56</sup>	44.907 <sup>151</sup>	41.23 <sup>281</sup>	38.216 <sup>188</sup>	29.10 <sup>76</sup>
Aug. 7.9	56.133 <sup>191</sup>	42.68 <sup>47</sup>	45.058 <sup>192</sup>	38.42 <sup>258</sup>	38.404 <sup>216</sup>	28.34 <sup>79</sup>
17.9	56.324 <sup>213</sup>	43.15 <sup>32</sup>	45.250 <sup>230</sup>	35.84 <sup>228</sup>	38.620 <sup>246</sup>	27.55 <sup>81</sup>
27.9	56.537 <sup>232</sup>	43.47 <sup>15</sup>	45.480 <sup>266</sup>	33.56 <sup>188</sup>	38.866 <sup>269</sup>	26.74 <sup>82</sup>
Sept. 6.9	56.769 <sup>253</sup>	43.62 <sup>6</sup>	45.746 <sup>296</sup>	31.68 <sup>140</sup>	39.135 <sup>293</sup>	25.92 <sup>84</sup>
16.8	57.022 <sup>269</sup>	43.56 <sup>27</sup>	46.042 <sup>322</sup>	30.28 <sup>86</sup>	39.428 <sup>308</sup>	25.08 <sup>80</sup>
26.8	57.291 <sup>282</sup>	43.29 <sup>47</sup>	46.364 <sup>340</sup>	29.42 <sup>27</sup>	39.736 <sup>328</sup>	24.28 <sup>84</sup>
Oct. 6.8	57.573 <sup>290</sup>	42.82 <sup>70</sup>	46.704 <sup>354</sup>	29.15 <sup>33</sup>	40.064 <sup>338</sup>	23.44 <sup>79</sup>
16.7	57.863 <sup>297</sup>	42.12 <sup>90</sup>	47.058 <sup>357</sup>	29.48 <sup>95</sup>	40.402 <sup>346</sup>	22.65 <sup>74</sup>
26.7	58.160 <sup>295</sup>	41.22 <sup>106</sup>	47.415 <sup>352</sup>	30.43 <sup>154</sup>	40.748 <sup>346</sup>	21.91 <sup>65</sup>
Nov. 5.7	58.455 <sup>291</sup>	40.16 <sup>118</sup>	47.767 <sup>338</sup>	31.97 <sup>208</sup>	41.094 <sup>340</sup>	21.26 <sup>55</sup>
15.7	58.746 <sup>277</sup>	38.98 <sup>127</sup>	48.105 <sup>315</sup>	34.05 <sup>255</sup>	41.434 <sup>328</sup>	20.71 <sup>41</sup>
25.6	59.023 <sup>260</sup>	37.71 <sup>130</sup>	48.420 <sup>279</sup>	36.60 <sup>293</sup>	41.762 <sup>308</sup>	20.30 <sup>26</sup>
Dec. 5.6	59.283 <sup>229</sup>	36.41 <sup>128</sup>	48.699 <sup>237</sup>	39.53 <sup>321</sup>	42.070 <sup>276</sup>	20.04 <sup>6</sup>
15.6	59.512 <sup>193</sup>	35.13 <sup>123</sup>	48.936 <sup>185</sup>	42.74 <sup>339</sup>	42.346 <sup>236</sup>	19.98 <sup>12</sup>
25.6	59.705 <sup>154</sup>	33.90 <sup>112</sup>	49.121 <sup>127</sup>	46.13 <sup>344</sup>	42.582 <sup>186</sup>	20.10 <sup>32</sup>
35.5	59.859	32.78	49.248	49.57	42.768	20.42
Mean Place	55.325	51.27	45.309	34.19	37.565	40.52
Sec $\delta$ , Tan $\delta$	1.011	+0.149	1.371	-0.937	1.180	+0.626
L $\alpha$ , L $\delta$	0.00	-0.1	-0.02	-0.1	+0.02	-0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	+0.9	-0.02	+0.9	+0.02	+0.9
AUTHORITY	A. E.		A. E.		A. E.	

# 326 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	Q Carinæ. Mag. 4.9		α Canis Minoris. Mag. 0.5		26 Monocerotis. Mag. 4.1	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 7 33	<sup>°</sup> 52 21	<sup>h</sup> 7 35	<sup>°</sup> 5 25	<sup>h</sup> 7 37	<sup>°</sup> 9 22
Jan. 0.5	46.267 <sup>92</sup>	40.87 <sup>366</sup>	14.744 <sup>130</sup>	21.96 <sup>129</sup>	32.861 <sup>125</sup>	15.62 <sup>211</sup>
10.5	46.359 <sup>17</sup>	44.53 <sup>359</sup>	14.874 <sup>77</sup>	20.67 <sup>111</sup>	32.986 <sup>77</sup>	17.73 <sup>197</sup>
20.5	46.376 <sup>56</sup>	48.12 <sup>341</sup>	14.951 <sup>29</sup>	19.56 <sup>95</sup>	33.063 <sup>25</sup>	19.70 <sup>178</sup>
30.5	46.320 <sup>126</sup>	51.53 <sup>315</sup>	14.980 <sup>20</sup>	18.61 <sup>76</sup>	33.088 <sup>24</sup>	21.48 <sup>155</sup>
Feb. 9.4	46.194 <sup>190</sup>	54.68 <sup>280</sup>	14.960 <sup>67</sup>	17.85 <sup>56</sup>	33.064 <sup>70</sup>	23.03 <sup>130</sup>
19.4	46.004 <sup>244</sup>	57.48 <sup>240</sup>	14.893 <sup>106</sup>	17.29 <sup>37</sup>	32.994 <sup>109</sup>	24.33 <sup>104</sup>
Mar. 1.4	45.760 <sup>289</sup>	59.88 <sup>196</sup>	14.787 <sup>140</sup>	16.92 <sup>23</sup>	32.885 <sup>142</sup>	25.37 <sup>76</sup>
11.4	45.471 <sup>320</sup>	61.84 <sup>148</sup>	14.647 <sup>162</sup>	16.69 <sup>9</sup>	32.743 <sup>166</sup>	26.13 <sup>50</sup>
21.3	45.151 <sup>339</sup>	63.32 <sup>98</sup>	14.485 <sup>176</sup>	16.60 <sup>7</sup>	32.577 <sup>180</sup>	26.63 <sup>24</sup>
31.3	44.812 <sup>347</sup>	64.30 <sup>46</sup>	14.309 <sup>176</sup>	16.67 <sup>18</sup>	32.397 <sup>183</sup>	26.87 <sup>2</sup>
Apr. 10.3	44.465 <sup>343</sup>	64.76 <sup>5</sup>	14.133 <sup>171</sup>	16.85 <sup>27</sup>	32.214 <sup>178</sup>	26.85 <sup>27</sup>
20.2	44.122 <sup>326</sup>	64.71 <sup>55</sup>	13.962 <sup>160</sup>	17.12 <sup>38</sup>	32.036 <sup>165</sup>	26.58 <sup>51</sup>
30.2	43.796 <sup>301</sup>	64.16 <sup>106</sup>	13.802 <sup>135</sup>	17.50 <sup>49</sup>	31.871 <sup>145</sup>	26.07 <sup>73</sup>
May 10.2	43.495 <sup>267</sup>	63.10 <sup>150</sup>	13.667 <sup>107</sup>	17.99 <sup>57</sup>	31.726 <sup>118</sup>	25.34 <sup>94</sup>
20.2	43.228 <sup>225</sup>	61.60 <sup>193</sup>	13.560 <sup>74</sup>	18.56 <sup>63</sup>	31.608 <sup>89</sup>	24.40 <sup>114</sup>
30.1	43.003 <sup>181</sup>	59.67 <sup>231</sup>	13.486 <sup>42</sup>	19.19 <sup>70</sup>	31.519 <sup>56</sup>	23.26 <sup>130</sup>
June 9.1	42.822 <sup>129</sup>	57.36 <sup>263</sup>	13.444 <sup>9</sup>	19.89 <sup>76</sup>	31.463 <sup>21</sup>	21.96 <sup>144</sup>
19.1	42.693 <sup>75</sup>	54.73 <sup>288</sup>	13.435 <sup>27</sup>	20.65 <sup>79</sup>	31.442 <sup>13</sup>	20.52 <sup>155</sup>
29.1	42.618 <sup>19</sup>	51.85 <sup>305</sup>	13.462 <sup>63</sup>	21.44 <sup>80</sup>	31.455 <sup>46</sup>	18.97 <sup>160</sup>
July 9.0	42.599 <sup>37</sup>	48.80 <sup>313</sup>	13.525 <sup>95</sup>	22.24 <sup>78</sup>	31.501 <sup>80</sup>	17.37 <sup>162</sup>
19.0	42.636 <sup>94</sup>	45.67 <sup>313</sup>	13.620 <sup>123</sup>	23.02 <sup>75</sup>	31.581 <sup>111</sup>	15.75 <sup>157</sup>
29.0	42.730 <sup>148</sup>	42.54 <sup>302</sup>	13.743 <sup>152</sup>	23.77 <sup>65</sup>	31.692 <sup>140</sup>	14.18 <sup>147</sup>
Aug. 7.9	42.878 <sup>201</sup>	39.52 <sup>281</sup>	13.895 <sup>181</sup>	24.42 <sup>54</sup>	31.832 <sup>168</sup>	12.71 <sup>132</sup>
17.9	43.079 <sup>250</sup>	36.71 <sup>250</sup>	14.076 <sup>205</sup>	24.96 <sup>36</sup>	32.000 <sup>193</sup>	11.39 <sup>110</sup>
27.9	43.329 <sup>295</sup>	34.21 <sup>210</sup>	14.281 <sup>226</sup>	25.32 <sup>20</sup>	32.193 <sup>216</sup>	10.29 <sup>84</sup>
Sept. 6.9	43.624 <sup>335</sup>	32.11 <sup>162</sup>	14.507 <sup>242</sup>	25.52 <sup>2</sup>	32.409 <sup>237</sup>	9.45 <sup>51</sup>
16.8	43.959 <sup>367</sup>	30.49 <sup>106</sup>	14.749 <sup>261</sup>	25.50 <sup>27</sup>	32.646 <sup>256</sup>	8.94 <sup>16</sup>
26.8	44.326 <sup>392</sup>	29.43 <sup>46</sup>	15.010 <sup>276</sup>	25.23 <sup>51</sup>	32.902 <sup>271</sup>	8.78 <sup>21</sup>
Oct. 6.8	44.718 <sup>408</sup>	28.97 <sup>18</sup>	15.286 <sup>287</sup>	24.72 <sup>77</sup>	33.173 <sup>284</sup>	8.99 <sup>60</sup>
16.8	45.126 <sup>414</sup>	29.15 <sup>83</sup>	15.573 <sup>292</sup>	23.95 <sup>99</sup>	33.457 <sup>290</sup>	9.59 <sup>97</sup>
26.7	45.540 <sup>407</sup>	29.98 <sup>146</sup>	15.865 <sup>294</sup>	22.96 <sup>119</sup>	33.747 <sup>293</sup>	10.56 <sup>133</sup>
Nov. 5.7	45.947 <sup>389</sup>	31.44 <sup>205</sup>	16.159 <sup>290</sup>	21.77 <sup>134</sup>	34.040 <sup>289</sup>	11.89 <sup>163</sup>
15.7	46.336 <sup>361</sup>	33.49 <sup>256</sup>	16.449 <sup>279</sup>	20.43 <sup>146</sup>	34.329 <sup>277</sup>	13.52 <sup>187</sup>
25.6	46.697 <sup>318</sup>	36.05 <sup>299</sup>	16.728 <sup>262</sup>	18.97 <sup>151</sup>	34.606 <sup>258</sup>	15.39 <sup>206</sup>
Dec. 5.6	47.015 <sup>266</sup>	39.04 <sup>331</sup>	16.990 <sup>232</sup>	17.46 <sup>151</sup>	34.864 <sup>230</sup>	17.45 <sup>216</sup>
15.6	47.281 <sup>204</sup>	42.35 <sup>354</sup>	17.222 <sup>197</sup>	15.95 <sup>146</sup>	35.094 <sup>195</sup>	19.61 <sup>217</sup>
25.6	47.485 <sup>135</sup>	45.89 <sup>364</sup>	17.419 <sup>157</sup>	14.49 <sup>134</sup>	35.289 <sup>153</sup>	21.78 <sup>216</sup>
35.5	47.620	49.53	17.576	13.15	35.442	23.94
Mean Place	43.643	34.53	13.185	32.78	31.225	5.66
Sec δ, Tan δ	1.637	-1.297	1.004	+0.095	1.014	-0.165
L α, L δ	-0.03	-0.2	0.00	-0.2	0.00	-0.2
ω α, ω δ	-0.03	+0.9	0.00	+0.9	0.00	+0.9
AUTHORITY			A. E.		A. N.	

# APPARENT PLACES OF STARS, 1922. 327

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Geminorum. Mag. 1.2		$\xi$ Argûs. Mag. 3.5		$\chi$ Geminorum. Mag. 5.0	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 7 40	<sup>°</sup> 28 12	<sup>h</sup> 7 46	<sup>°</sup> 24 39	<sup>h</sup> 7 58	<sup>°</sup> 28 0
Jan. 0.5	34.426 <sup>158</sup>	43.52 <sup>11</sup>	2.618 <sup>126</sup>	55.34 <sup>286</sup>	45.502 <sup>178</sup>	36.96 <sup>5</sup>
10.5	34.584 <sup>106</sup>	43.63 <sup>31</sup>	2.744 <sup>72</sup>	58.20 <sup>275</sup>	45.680 <sup>126</sup>	37.01 <sup>23</sup>
20.5	34.690 <sup>48</sup>	43.94 <sup>46</sup>	2.816 <sup>19</sup>	60.95 <sup>256</sup>	45.806 <sup>68</sup>	37.24 <sup>43</sup>
30.5	34.738 <sup>11</sup>	44.40 <sup>57</sup>	2.835 <sup>33</sup>	63.51 <sup>232</sup>	45.874 <sup>11</sup>	37.67 <sup>57</sup>
Feb. 9.4	34.727 <sup>64</sup>	44.97 <sup>66</sup>	2.802 <sup>82</sup>	65.83 <sup>203</sup>	45.885 <sup>44</sup>	38.24 <sup>66</sup>
19.4	34.663 <sup>108</sup>	45.63 <sup>67</sup>	2.720 <sup>124</sup>	67.86 <sup>170</sup>	45.841 <sup>92</sup>	38.90 <sup>72</sup>
Mar. 1.4	34.555 <sup>146</sup>	46.30 <sup>65</sup>	2.596 <sup>159</sup>	69.56 <sup>135</sup>	45.749 <sup>133</sup>	39.62 <sup>72</sup>
11.4	34.409 <sup>177</sup>	46.95 <sup>58</sup>	2.437 <sup>185</sup>	70.91 <sup>97</sup>	45.616 <sup>163</sup>	40.34 <sup>70</sup>
21.3	34.232 <sup>194</sup>	47.53 <sup>51</sup>	2.252 <sup>200</sup>	71.88 <sup>61</sup>	45.453 <sup>184</sup>	41.04 <sup>59</sup>
31.3	34.038 <sup>199</sup>	48.04 <sup>41</sup>	2.052 <sup>206</sup>	72.49 <sup>23</sup>	45.269 <sup>194</sup>	41.63 <sup>50</sup>
Apr. 10.3	33.839 <sup>192</sup>	48.45 <sup>28</sup>	1.846 <sup>203</sup>	72.72 <sup>14</sup>	45.075 <sup>192</sup>	42.13 <sup>39</sup>
20.2	33.647 <sup>181</sup>	48.73 <sup>16</sup>	1.643 <sup>191</sup>	72.58 <sup>51</sup>	44.883 <sup>180</sup>	42.52 <sup>26</sup>
30.2	33.466 <sup>156</sup>	48.89 <sup>0</sup>	1.452 <sup>171</sup>	72.07 <sup>85</sup>	44.703 <sup>161</sup>	42.78 <sup>11</sup>
May 10.2	33.310 <sup>125</sup>	48.89 <sup>11</sup>	1.281 <sup>146</sup>	71.22 <sup>118</sup>	44.542 <sup>134</sup>	42.89 <sup>2</sup>
20.2	33.185 <sup>93</sup>	48.78 <sup>21</sup>	1.135 <sup>117</sup>	70.04 <sup>147</sup>	44.408 <sup>99</sup>	42.87 <sup>14</sup>
30.1	33.092 <sup>53</sup>	48.57 <sup>27</sup>	1.018 <sup>84</sup>	68.57 <sup>175</sup>	44.309 <sup>66</sup>	42.73 <sup>24</sup>
June 9.1	33.039 <sup>12</sup>	48.30 <sup>38</sup>	0.934 <sup>49</sup>	66.82 <sup>196</sup>	44.243 <sup>29</sup>	42.49 <sup>34</sup>
19.1	33.027 <sup>25</sup>	47.92 <sup>44</sup>	0.885 <sup>13</sup>	64.86 <sup>213</sup>	44.214 <sup>10</sup>	42.15 <sup>43</sup>
29.1	33.052 <sup>64</sup>	47.48 <sup>49</sup>	0.872 <sup>24</sup>	62.73 <sup>225</sup>	44.224 <sup>50</sup>	41.72 <sup>49</sup>
July 9.0	33.116 <sup>103</sup>	46.99 <sup>53</sup>	0.896 <sup>59</sup>	60.48 <sup>230</sup>	44.274 <sup>83</sup>	41.23 <sup>56</sup>
19.0	33.219 <sup>137</sup>	46.46 <sup>56</sup>	0.955 <sup>94</sup>	58.18 <sup>227</sup>	44.357 <sup>119</sup>	40.67 <sup>61</sup>
29.0	33.356 <sup>168</sup>	45.90 <sup>61</sup>	1.049 <sup>128</sup>	55.91 <sup>217</sup>	44.476 <sup>150</sup>	40.06 <sup>67</sup>
Aug. 7.9	33.524 <sup>201</sup>	45.29 <sup>67</sup>	1.177 <sup>159</sup>	53.74 <sup>200</sup>	44.626 <sup>182</sup>	39.39 <sup>72</sup>
17.9	33.725 <sup>223</sup>	44.62 <sup>68</sup>	1.336 <sup>189</sup>	51.74 <sup>174</sup>	44.808 <sup>209</sup>	38.67 <sup>79</sup>
27.9	33.948 <sup>251</sup>	43.94 <sup>73</sup>	1.525 <sup>217</sup>	50.00 <sup>142</sup>	45.017 <sup>237</sup>	37.88 <sup>85</sup>
Sept. 6.9	34.199 <sup>273</sup>	43.21 <sup>78</sup>	1.742 <sup>242</sup>	48.58 <sup>103</sup>	45.254 <sup>260</sup>	37.03 <sup>91</sup>
16.8	34.472 <sup>294</sup>	42.43 <sup>84</sup>	1.984 <sup>264</sup>	47.55 <sup>58</sup>	45.514 <sup>282</sup>	36.12 <sup>96</sup>
26.8	34.766 <sup>307</sup>	41.59 <sup>86</sup>	2.248 <sup>284</sup>	46.97 <sup>10</sup>	45.796 <sup>301</sup>	35.16 <sup>99</sup>
Oct. 6.8	35.073 <sup>324</sup>	40.73 <sup>89</sup>	2.532 <sup>297</sup>	46.87 <sup>40</sup>	46.097 <sup>319</sup>	34.17 <sup>102</sup>
16.8	35.397 <sup>332</sup>	39.84 <sup>85</sup>	2.829 <sup>306</sup>	47.27 <sup>91</sup>	46.416 <sup>331</sup>	33.15 <sup>104</sup>
26.7	35.729 <sup>335</sup>	38.99 <sup>83</sup>	3.135 <sup>308</sup>	48.18 <sup>138</sup>	46.747 <sup>339</sup>	32.11 <sup>97</sup>
Nov. 5.7	36.064 <sup>332</sup>	38.16 <sup>77</sup>	3.443 <sup>303</sup>	49.56 <sup>183</sup>	47.086 <sup>337</sup>	31.14 <sup>91</sup>
15.7	36.396 <sup>323</sup>	37.39 <sup>62</sup>	3.746 <sup>291</sup>	51.39 <sup>220</sup>	47.423 <sup>331</sup>	30.23 <sup>79</sup>
25.6	36.719 <sup>304</sup>	36.77 <sup>52</sup>	4.037 <sup>269</sup>	53.59 <sup>250</sup>	47.754 <sup>315</sup>	29.44 <sup>65</sup>
Dec. 5.6	37.023 <sup>276</sup>	36.25 <sup>33</sup>	4.306 <sup>238</sup>	56.09 <sup>272</sup>	48.069 <sup>289</sup>	28.79 <sup>48</sup>
15.6	37.299 <sup>236</sup>	35.92 <sup>18</sup>	4.544 <sup>201</sup>	58.81 <sup>283</sup>	48.358 <sup>255</sup>	28.31 <sup>29</sup>
25.6	37.535 <sup>190</sup>	35.74 <sup>4</sup>	4.745 <sup>155</sup>	61.64 <sup>287</sup>	48.613 <sup>210</sup>	28.02 <sup>5</sup>
35.5	37.725	35.78	4.900	64.51	48.823	27.97
Mean Place	32.745	56.84	0.828	47.25	43.887	50.78
Sec $\delta$ , Tan $\delta$	1.135	+0.537	1.100	-0.459	1.133	+0.532
L $\alpha$ , L $\delta$	+0.01	-0.2	-0.01	-0.2	+0.01	-0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.02	+0.9	-0.01	+0.9	+0.02	+0.9
AUTHORITY	A. E.		A. E.		A. E.	

328 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ζ Argûs. Mag. 2·3		ρ Argûs. Mag. 2·9		γ Argûs. Mag. 2·2	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 8 <sup>m</sup> 0	<sup>°</sup> 39 <sup>′</sup> 46	<sup>h</sup> 8 <sup>m</sup> 4	<sup>°</sup> 24 <sup>′</sup> 4	<sup>h</sup> 8 <sup>m</sup> 7	<sup>°</sup> 47 <sup>′</sup> 6
Jan. 0·6	52·619 <sup>137</sup>	64·14 <sup>342</sup>	15·073 <sup>145</sup>	49·89 <sup>285</sup>	10·171 <sup>146</sup>	26·85 <sup>358</sup>
10·5	52·756 <sup>76</sup>	67·56 <sup>335</sup>	15·218 <sup>93</sup>	52·74 <sup>278</sup>	10·317 <sup>77</sup>	30·43 <sup>357</sup>
20·5	52·832 <sup>16</sup>	70·91 <sup>321</sup>	15·311 <sup>39</sup>	55·52 <sup>260</sup>	10·394 <sup>12</sup>	34·00 <sup>343</sup>
30·5	52·848 <sup>45</sup>	74·12 <sup>297</sup>	15·350 <sup>14</sup>	58·12 <sup>236</sup>	10·406 <sup>57</sup>	37·43 <sup>322</sup>
Feb. 9·4	52·803 <sup>101</sup>	77·09 <sup>268</sup>	15·336 <sup>64</sup>	60·48 <sup>208</sup>	10·349 <sup>117</sup>	40·65 <sup>295</sup>
19·4	52·702 <sup>150</sup>	79·77 <sup>234</sup>	15·272 <sup>105</sup>	62·56 <sup>180</sup>	10·232 <sup>172</sup>	43·60 <sup>260</sup>
Mar. 1·4	52·552 <sup>189</sup>	82·11 <sup>193</sup>	15·167 <sup>144</sup>	64·36 <sup>143</sup>	10·060 <sup>217</sup>	46·20 <sup>219</sup>
11·4	52·363 <sup>221</sup>	84·04 <sup>150</sup>	15·023 <sup>172</sup>	65·79 <sup>108</sup>	9·843 <sup>251</sup>	48·39 <sup>175</sup>
21·3	52·142 <sup>242</sup>	85·54 <sup>106</sup>	14·851 <sup>191</sup>	66·87 <sup>71</sup>	9·592 <sup>277</sup>	50·14 <sup>129</sup>
31·3	51·900 <sup>252</sup>	86·60 <sup>60</sup>	14·660 <sup>198</sup>	67·58 <sup>35</sup>	9·315 <sup>290</sup>	51·43 <sup>79</sup>
Apr. 10·3	51·648 <sup>253</sup>	87·20 <sup>14</sup>	14·462 <sup>196</sup>	67·93 <sup>1</sup>	9·025 <sup>293</sup>	52·22 <sup>30</sup>
20·3	51·395 <sup>243</sup>	87·34 <sup>31</sup>	14·266 <sup>192</sup>	67·92 <sup>38</sup>	8·732 <sup>284</sup>	52·52 <sup>18</sup>
30·2	51·152 <sup>227</sup>	87·03 <sup>76</sup>	14·074 <sup>174</sup>	67·54 <sup>74</sup>	8·448 <sup>269</sup>	52·34 <sup>67</sup>
May 10·2	50·925 <sup>200</sup>	86·27 <sup>119</sup>	13·900 <sup>153</sup>	66·80 <sup>102</sup>	8·179 <sup>243</sup>	51·67 <sup>113</sup>
20·2	50·725 <sup>172</sup>	85·08 <sup>157</sup>	13·747 <sup>125</sup>	65·78 <sup>135</sup>	7·936 <sup>212</sup>	50·54 <sup>155</sup>
30·2	50·553 <sup>137</sup>	83·51 <sup>192</sup>	13·622 <sup>93</sup>	64·43 <sup>162</sup>	7·724 <sup>176</sup>	48·99 <sup>195</sup>
June 9·1	50·416 <sup>98</sup>	81·59 <sup>224</sup>	13·529 <sup>62</sup>	62·81 <sup>184</sup>	7·548 <sup>133</sup>	47·04 <sup>230</sup>
19·1	50·318 <sup>60</sup>	79·35 <sup>248</sup>	13·467 <sup>29</sup>	60·97 <sup>203</sup>	7·415 <sup>92</sup>	44·74 <sup>258</sup>
29·1	50·258 <sup>16</sup>	76·87 <sup>268</sup>	13·438 <sup>7</sup>	58·94 <sup>216</sup>	7·323 <sup>43</sup>	42·16 <sup>278</sup>
July 9·0	50·242 <sup>25</sup>	74·19 <sup>277</sup>	13·445 <sup>41</sup>	56·78 <sup>220</sup>	7·280 <sup>2</sup>	39·38 <sup>293</sup>
19·0	50·267 <sup>67</sup>	71·42 <sup>279</sup>	13·486 <sup>78</sup>	54·58 <sup>221</sup>	7·282 <sup>53</sup>	36·45 <sup>297</sup>
29·0	50·334 <sup>108</sup>	68·63 <sup>272</sup>	13·564 <sup>108</sup>	52·37 <sup>216</sup>	7·335 <sup>100</sup>	33·48 <sup>292</sup>
Aug. 8·0	50·442 <sup>152</sup>	65·91 <sup>256</sup>	13·672 <sup>143</sup>	50·21 <sup>197</sup>	7·435 <sup>148</sup>	30·56 <sup>277</sup>
17·9	50·594 <sup>188</sup>	63·35 <sup>231</sup>	13·815 <sup>173</sup>	48·24 <sup>174</sup>	7·583 <sup>195</sup>	27·79 <sup>254</sup>
27·9	50·782 <sup>225</sup>	61·04 <sup>196</sup>	13·988 <sup>202</sup>	46·50 <sup>144</sup>	7·778 <sup>237</sup>	25·25 <sup>220</sup>
Sept. 6·9	51·007 <sup>260</sup>	59·08 <sup>154</sup>	14·190 <sup>230</sup>	45·06 <sup>106</sup>	8·015 <sup>278</sup>	23·05 <sup>176</sup>
16·9	51·267 <sup>289</sup>	57·54 <sup>105</sup>	14·420 <sup>254</sup>	44·00 <sup>65</sup>	8·293 <sup>313</sup>	21·29 <sup>127</sup>
26·8	51·556 <sup>315</sup>	56·49 <sup>49</sup>	14·674 <sup>276</sup>	43·35 <sup>18</sup>	8·606 <sup>343</sup>	20·02 <sup>69</sup>
Oct. 6·8	51·871 <sup>334</sup>	56·00 <sup>7</sup>	14·950 <sup>294</sup>	43·17 <sup>32</sup>	8·949 <sup>367</sup>	19·33 <sup>11</sup>
16·8	52·205 <sup>346</sup>	56·07 <sup>68</sup>	15·244 <sup>301</sup>	43·49 <sup>83</sup>	9·316 <sup>381</sup>	19·22 <sup>56</sup>
26·7	52·551 <sup>350</sup>	56·75 <sup>126</sup>	15·545 <sup>314</sup>	44·32 <sup>129</sup>	9·697 <sup>386</sup>	19·78 <sup>115</sup>
Nov. 5·7	52·901 <sup>344</sup>	58·01 <sup>182</sup>	15·859 <sup>308</sup>	45·61 <sup>172</sup>	10·083 <sup>379</sup>	20·93 <sup>174</sup>
15·7	53·245 <sup>329</sup>	59·83 <sup>230</sup>	16·167 <sup>300</sup>	47·33 <sup>211</sup>	10·462 <sup>362</sup>	22·67 <sup>229</sup>
25·7	53·574 <sup>304</sup>	62·13 <sup>272</sup>	16·467 <sup>278</sup>	49·44 <sup>245</sup>	10·824 <sup>331</sup>	24·96 <sup>273</sup>
Dec. 5·6	53·878 <sup>269</sup>	64·85 <sup>305</sup>	16·745 <sup>255</sup>	51·89 <sup>265</sup>	11·155 <sup>292</sup>	27·69 <sup>310</sup>
15·6	54·147 <sup>224</sup>	67·90 <sup>324</sup>	17·000 <sup>216</sup>	54·54 <sup>281</sup>	11·447 <sup>242</sup>	30·79 <sup>338</sup>
25·6	54·371 <sup>171</sup>	71·14 <sup>337</sup>	17·216 <sup>174</sup>	57·35 <sup>287</sup>	11·689 <sup>184</sup>	34·17 <sup>351</sup>
35·6	54·542	74·51	17·390	60·22	11·873	37·68
Mean Place	50·506	58·60	13·310	42·59	7·796	22·58
Sec δ, Tan δ	1·301	—0·833	1·095	—0·447	1·469	—1·076
L α, L δ	—0·02	—0·2	—0·01	—0·2	—0·02	—0·2
ω α, ω δ	—0·03	+0·9	—0·02	+0·9	—0·04	+0·9
AUTHORITY	A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 329

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	20 Puppis. Mag. 5.1		$\beta$ Cancri. Mag. 3.8		$\delta^1$ Cancri. Mag. 5.9	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 8	<sup>m</sup> 9	<sup>h</sup> 15	<sup>m</sup> 33	<sup>h</sup> 8	<sup>m</sup> 18
	8	9	8	12	8	18
Jan. 0.6	46.506	153	16.53	249	25.28	115
10.5	46.659	105	19.02	237	24.13	95
20.5	46.764	52	21.39	220	23.18	75
30.5	46.816	3	23.59	196	22.43	58
Feb. 9.5	46.819	48	25.55	173	21.85	36
19.4	46.771	90	27.28	143	21.49	20
Mar. 1.4	46.681	125	28.71	114	21.29	5
11.4	46.556	154	29.85	82	21.24	8
21.3	46.402	172	30.67	52	21.32	18
31.3	46.230	181	31.19	22	21.50	28
Apr. 10.3	46.049	182	31.41	9	21.78	34
20.3	45.867	174	31.32	38	22.12	40
30.2	45.693	160	30.94	66	22.52	44
May 10.2	45.533	137	30.28	92	22.96	48
20.2	45.396	113	29.36	113	23.44	51
30.2	45.283	82	28.23	137	23.95	52
June 9.1	45.201	52	26.86	156	24.47	55
19.1	45.149	20	25.30	167	25.02	54
29.1	45.129	13	23.63	177	25.56	54
July 9.0	45.142	45	21.86	183	26.10	50
19.0	45.187	77	20.03	180	26.60	45
29.0	45.264	107	18.23	174	27.05	37
Aug. 8.0	45.371	138	16.49	159	27.42	26
17.9	45.509	166	14.90	138	27.68	11
27.9	45.675	195	13.52	110	27.79	5
Sept. 6.9	45.870	219	12.42	78	27.74	24
16.9	46.089	243	11.64	40	27.50	45
26.8	46.332	262	11.24	1	27.05	67
Oct. 6.8	46.594	281	11.25	47	26.38	88
16.8	46.875	294	11.72	87	25.50	106
26.7	47.169	302	12.59	128	24.44	121
Nov. 5.7	47.471	302	13.87	165	23.23	136
15.7	47.773	295	15.52	198	21.87	145
25.7	48.068	279	17.50	224	20.42	147
Dec. 5.6	48.347	255	19.74	239	18.95	143
15.6	48.602	222	22.13	249	17.52	134
25.6	48.824	181	24.62	250	16.18	122
35.6	49.005		27.12		14.96	
Mean Place	44.861	8.29	17.192	37.03	54.008	61.11
Sec $\delta$ , Tan $\delta$	1.038	-0.278	1.014	+0.166	1.055	+0.336
L $\alpha$ , L $\delta$	-0.01	-0.2	0.00	-0.2	+0.01	-0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	+0.8	+0.01	+0.8	+0.01	+0.8
AUTHORITY	A. E.		A. E.		A. E.	

# 330 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Argûs. Mag. 1·7		30 Monocerotis. Mag. 4·0		ο Ursæ Majoris. Mag. 3·5	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 8 <sup>m</sup> 20	<sup>°</sup> 59 <sup>'</sup> 15	<sup>h</sup> 8 <sup>m</sup> 21	<sup>°</sup> 3 <sup>'</sup> 39	<sup>h</sup> 8 <sup>m</sup> 23	<sup>°</sup> 60 <sup>'</sup> 58
Jan. 0·6	58·004 <sup>s</sup> <sub>176</sub>	31·16 <sup>s</sup> <sub>374</sub>	47·387 <sup>s</sup> <sub>170</sub>	13·25 <sup>s</sup> <sub>192</sub>	50·26 <sup>s</sup> <sub>33</sub>	31·89 <sup>s</sup> <sub>177</sub>
10·5	58·180 <sub>91</sub>	34·90 <sub>379</sub>	47·557 <sub>125</sub>	15·17 <sub>174</sub>	50·59 <sub>23</sub>	33·66 <sub>205</sub>
20·5	58·271 <sub>5</sub>	38·69 <sub>371</sub>	47·682 <sub>70</sub>	16·91 <sub>158</sub>	50·82 <sub>13</sub>	35·71 <sub>222</sub>
30·5	58·276 <sub>80</sub>	42·40 <sub>355</sub>	47·752 <sub>25</sub>	18·49 <sub>135</sub>	50·95 <sub>4</sub>	37·93 <sub>233</sub>
Feb. 9·5	58·196 <sub>159</sub>	45·95 <sub>331</sub>	47·777 <sub>27</sub>	19·84 <sub>114</sub>	50·99 <sub>6</sub>	40·26 <sub>234</sub>
19·4	58·037 <sub>230</sub>	49·26 <sub>298</sub>	47·750 <sub>70</sub>	20·98 <sub>89</sub>	50·93 <sub>15</sub>	42·60 <sub>222</sub>
Mar. 1·4	57·807 <sub>291</sub>	52·24 <sub>260</sub>	47·680 <sub>105</sub>	21·87 <sub>64</sub>	50·78 <sub>23</sub>	44·82 <sub>203</sub>
11·4	57·516 <sub>339</sub>	54·84 <sub>214</sub>	47·575 <sub>137</sub>	22·51 <sub>42</sub>	50·55 <sub>29</sub>	46·85 <sub>177</sub>
21·4	57·177 <sub>374</sub>	56·98 <sub>169</sub>	47·438 <sub>156</sub>	22·93 <sub>20</sub>	50·26 <sub>34</sub>	48·62 <sub>142</sub>
31·3	56·803 <sub>396</sub>	58·67 <sub>118</sub>	47·282 <sub>163</sub>	23·13 <sub>2</sub>	49·92 <sub>37</sub>	50·04 <sub>102</sub>
Apr. 10·3	56·407 <sub>405</sub>	59·85 <sub>65</sub>	47·119 <sub>168</sub>	23·15 <sub>19</sub>	49·55 <sub>38</sub>	51·06 <sub>60</sub>
20·3	56·002 <sub>403</sub>	60·50 <sub>13</sub>	46·951 <sub>162</sub>	22·96 <sub>39</sub>	49·17 <sub>37</sub>	51·66 <sub>17</sub>
30·2	55·599 <sub>386</sub>	60·63 <sub>39</sub>	46·789 <sub>149</sub>	22·57 <sub>55</sub>	48·80 <sub>35</sub>	51·83 <sub>28</sub>
May 10·2	55·213 <sub>361</sub>	60·24 <sub>91</sub>	46·640 <sub>132</sub>	22·02 <sub>70</sub>	48·45 <sub>31</sub>	51·55 <sub>70</sub>
20·2	54·852 <sub>328</sub>	59·33 <sub>138</sub>	46·508 <sub>103</sub>	21·32 <sub>86</sub>	48·14 <sub>26</sub>	50·85 <sub>108</sub>
30·2	54·524 <sub>285</sub>	57·95 <sub>183</sub>	46·405 <sub>77</sub>	20·46 <sub>97</sub>	47·88 <sub>21</sub>	49·77 <sub>144</sub>
June 9·1	54·239 <sub>235</sub>	56·12 <sub>224</sub>	46·328 <sub>48</sub>	19·49 <sub>108</sub>	47·67 <sub>14</sub>	48·33 <sub>173</sub>
19·1	54·004 <sub>181</sub>	53·88 <sub>258</sub>	46·280 <sub>20</sub>	18·41 <sub>111</sub>	47·53 <sub>8</sub>	46·60 <sub>200</sub>
29·1	53·823 <sub>121</sub>	51·30 <sub>285</sub>	46·260 <sub>13</sub>	17·30 <sub>118</sub>	47·45 <sub>0</sub>	44·60 <sub>218</sub>
July 9·1	53·702 <sub>57</sub>	48·45 <sub>303</sub>	46·273 <sub>42</sub>	16·12 <sub>122</sub>	47·45 <sub>6</sub>	42·42 <sub>235</sub>
19·0	53·645 <sub>6</sub>	45·42 <sub>315</sub>	46·315 <sub>74</sub>	14·90 <sub>119</sub>	47·51 <sub>13</sub>	40·07 <sub>242</sub>
29·0	53·651 <sub>77</sub>	42·27 <sub>315</sub>	46·389 <sub>102</sub>	13·71 <sub>107</sub>	47·64 <sub>19</sub>	37·65 <sub>247</sub>
Aug. 8·0	53·728 <sub>141</sub>	39·12 <sub>306</sub>	46·491 <sub>132</sub>	12·64 <sub>97</sub>	47·83 <sub>25</sub>	35·18 <sub>248</sub>
17·9	53·869 <sub>210</sub>	36·06 <sub>283</sub>	46·623 <sub>157</sub>	11·67 <sub>78</sub>	48·08 <sub>31</sub>	32·70 <sub>242</sub>
27·9	54·079 <sub>272</sub>	33·23 <sub>254</sub>	46·780 <sub>186</sub>	10·89 <sub>54</sub>	48·39 <sub>36</sub>	30·28 <sub>232</sub>
Sept. 6·9	54·351 <sub>331</sub>	30·69 <sub>212</sub>	46·966 <sub>209</sub>	10·35 <sub>30</sub>	48·75 <sub>41</sub>	27·96 <sub>219</sub>
16·9	54·682 <sub>383</sub>	28·57 <sub>162</sub>	47·175 <sub>234</sub>	10·05 <sub>1</sub>	49·16 <sub>46</sub>	25·77 <sub>199</sub>
26·8	55·065 <sub>426</sub>	26·95 <sub>107</sub>	47·409 <sub>251</sub>	10·06 <sub>32</sub>	49·62 <sub>50</sub>	23·78 <sub>178</sub>
Oct. 6·8	55·491 <sub>461</sub>	25·88 <sub>43</sub>	47·660 <sub>275</sub>	10·38 <sub>67</sub>	50·12 <sub>53</sub>	22·00 <sub>152</sub>
16·8	55·952 <sub>483</sub>	25·45 <sub>22</sub>	47·935 <sub>288</sub>	11·05 <sub>98</sub>	50·65 <sub>56</sub>	20·48 <sub>121</sub>
26·8	56·435 <sub>489</sub>	25·67 <sub>87</sub>	48·223 <sub>297</sub>	12·03 <sub>128</sub>	51·21 <sub>57</sub>	19·27 <sub>84</sub>
Nov. 5·7	56·924 <sub>482</sub>	26·54 <sub>150</sub>	48·520 <sub>302</sub>	13·31 <sub>152</sub>	51·78 <sub>58</sub>	18·43 <sub>45</sub>
15·7	57·406 <sub>459</sub>	28·04 <sub>213</sub>	48·822 <sub>298</sub>	14·83 <sub>177</sub>	52·36 <sub>56</sub>	17·98 <sub>8</sub>
25·7	57·865 <sub>421</sub>	30·17 <sub>262</sub>	49·120 <sub>286</sub>	16·60 <sub>190</sub>	52·92 <sub>55</sub>	17·90 <sub>37</sub>
Dec. 5·6	58·286 <sub>366</sub>	32·79 <sub>308</sub>	49·406 <sub>264</sub>	18·50 <sub>198</sub>	53·47 <sub>50</sub>	18·27 <sub>80</sub>
15·6	58·652 <sub>301</sub>	35·87 <sub>342</sub>	49·670 <sub>235</sub>	20·48 <sub>202</sub>	53·97 <sub>45</sub>	19·07 <sub>120</sub>
25·6	58·953 <sub>227</sub>	39·29 <sub>363</sub>	49·905 <sub>197</sub>	22·50 <sub>194</sub>	54·42 <sub>38</sub>	20·27 <sub>158</sub>
35·6	59·180	42·92	50·102	24·44	54·80	21·85
Mean Place	54·881	29·32	45·865	3·59	47·97	49·45
Sec δ, Tan δ	1·956	—1·681	1·002	—0·064	2·061	+1·803
L α, L δ	—0·04	—0·2	0·00	—0·2	+0·04	—0·2
ω α, ω δ	—0·06	+0·8	0·00	+0·8	+0·07	+0·8
AUTHORITY	A. E.		A. E.		A. E.	



APPARENT PLACES OF STARS, 1922. 331

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\eta$ Cancri. Mag. 5.5		$\gamma$ Cancri. Mag. 4.7		$\alpha$ Mali. Mag. 3.7	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 8 28 <sup>m</sup> <sup>s</sup>	<sup>°</sup> 20 42 <sup>'</sup>	<sup>h</sup> 8 38 <sup>m</sup> <sup>s</sup>	<sup>°</sup> 21 44 <sup>'</sup>	<sup>h</sup> 8 40 <sup>m</sup> <sup>s</sup>	<sup>°</sup> 32 54 <sup>'</sup>
Jan. 0.6	13.536 <sup>200</sup>	12.09 <sup>53</sup>	47.953 <sup>212</sup>	46.31 <sup>52</sup>	29.317 <sup>183</sup>	20.11 <sup>319</sup>
10.5	13.736 <sup>149</sup>	11.56 <sup>29</sup>	48.165 <sup>159</sup>	45.79 <sup>27</sup>	29.500 <sup>130</sup>	23.30 <sup>318</sup>
20.5	13.885 <sup>95</sup>	11.27 <sup>9</sup>	48.324 <sup>108</sup>	45.52 <sup>6</sup>	29.630 <sup>72</sup>	26.48 <sup>308</sup>
30.5	13.980 <sup>41</sup>	11.18 <sup>9</sup>	48.432 <sup>52</sup>	45.46 <sup>16</sup>	29.702 <sup>17</sup>	29.56 <sup>288</sup>
Feb. 9.5	14.021 <sup>11</sup>	11.27 <sup>26</sup>	48.484 <sup>1</sup>	45.62 <sup>34</sup>	29.719 <sup>37</sup>	32.44 <sup>265</sup>
19.4	14.010 <sup>61</sup>	11.53 <sup>42</sup>	48.483 <sup>51</sup>	45.96 <sup>48</sup>	29.682 <sup>88</sup>	35.09 <sup>234</sup>
Mar. 1.4	13.949 <sup>100</sup>	11.95 <sup>48</sup>	48.432 <sup>94</sup>	46.44 <sup>57</sup>	29.594 <sup>129</sup>	37.43 <sup>199</sup>
11.4	13.849 <sup>137</sup>	12.43 <sup>54</sup>	48.338 <sup>129</sup>	47.01 <sup>61</sup>	29.465 <sup>165</sup>	39.42 <sup>162</sup>
21.4	13.712 <sup>161</sup>	12.97 <sup>55</sup>	48.209 <sup>155</sup>	47.62 <sup>63</sup>	29.300 <sup>188</sup>	41.04 <sup>125</sup>
31.3	13.551 <sup>168</sup>	13.52 <sup>54</sup>	48.054 <sup>170</sup>	48.25 <sup>60</sup>	29.112 <sup>205</sup>	42.29 <sup>81</sup>
Apr. 10.3	13.383 <sup>176</sup>	14.06 <sup>51</sup>	47.884 <sup>174</sup>	48.85 <sup>55</sup>	28.907 <sup>211</sup>	43.10 <sup>42</sup>
20.3	13.207 <sup>170</sup>	14.57 <sup>42</sup>	47.710 <sup>171</sup>	49.40 <sup>47</sup>	28.696 <sup>211</sup>	43.52 <sup>2</sup>
30.2	13.037 <sup>156</sup>	14.99 <sup>36</sup>	47.539 <sup>159</sup>	49.87 <sup>39</sup>	28.485 <sup>200</sup>	43.50 <sup>41</sup>
May 10.2	12.881 <sup>136</sup>	15.35 <sup>27</sup>	47.380 <sup>139</sup>	50.26 <sup>29</sup>	28.285 <sup>184</sup>	43.09 <sup>81</sup>
20.2	12.745 <sup>110</sup>	15.62 <sup>20</sup>	47.241 <sup>114</sup>	50.55 <sup>20</sup>	28.101 <sup>163</sup>	42.28 <sup>116</sup>
30.2	12.635 <sup>78</sup>	15.82 <sup>13</sup>	47.127 <sup>87</sup>	50.75 <sup>12</sup>	27.938 <sup>136</sup>	41.12 <sup>149</sup>
June 9.1	12.557 <sup>50</sup>	15.95 <sup>6</sup>	47.040 <sup>56</sup>	50.87 <sup>1</sup>	27.802 <sup>107</sup>	39.63 <sup>182</sup>
19.1	12.507 <sup>18</sup>	16.01 <sup>3</sup>	46.984 <sup>25</sup>	50.88 <sup>7</sup>	27.695 <sup>74</sup>	37.81 <sup>207</sup>
29.1	12.489 <sup>19</sup>	15.98 <sup>11</sup>	46.959 <sup>9</sup>	50.81 <sup>15</sup>	27.621 <sup>40</sup>	35.74 <sup>227</sup>
July 9.1	12.508 <sup>51</sup>	15.87 <sup>18</sup>	46.968 <sup>40</sup>	50.66 <sup>24</sup>	27.581 <sup>5</sup>	33.47 <sup>239</sup>
19.0	12.559 <sup>80</sup>	15.69 <sup>24</sup>	47.008 <sup>72</sup>	50.42 <sup>33</sup>	27.576 <sup>30</sup>	31.08 <sup>246</sup>
29.0	12.639 <sup>111</sup>	15.45 <sup>32</sup>	47.080 <sup>103</sup>	50.09 <sup>44</sup>	27.606 <sup>69</sup>	28.62 <sup>244</sup>
Aug. 8.0	12.750 <sup>144</sup>	15.13 <sup>44</sup>	47.183 <sup>132</sup>	49.65 <sup>53</sup>	27.675 <sup>104</sup>	26.18 <sup>235</sup>
17.9	12.894 <sup>169</sup>	14.69 <sup>55</sup>	47.315 <sup>161</sup>	49.12 <sup>64</sup>	27.779 <sup>141</sup>	23.83 <sup>214</sup>
27.9	13.063 <sup>198</sup>	14.14 <sup>69</sup>	47.476 <sup>189</sup>	48.48 <sup>76</sup>	27.920 <sup>177</sup>	21.69 <sup>186</sup>
Sept. 6.9	13.261 <sup>225</sup>	13.45 <sup>78</sup>	47.665 <sup>216</sup>	47.72 <sup>88</sup>	28.097 <sup>212</sup>	19.83 <sup>152</sup>
16.9	13.486 <sup>248</sup>	12.67 <sup>92</sup>	47.881 <sup>242</sup>	46.84 <sup>101</sup>	28.309 <sup>244</sup>	18.31 <sup>109</sup>
26.8	13.734 <sup>272</sup>	11.75 <sup>102</sup>	48.123 <sup>267</sup>	45.83 <sup>111</sup>	28.553 <sup>273</sup>	17.22 <sup>62</sup>
Oct. 6.8	14.006 <sup>292</sup>	10.73 <sup>114</sup>	48.390 <sup>288</sup>	44.72 <sup>122</sup>	28.826 <sup>300</sup>	16.60 <sup>7</sup>
16.8	14.298 <sup>309</sup>	9.59 <sup>121</sup>	48.678 <sup>307</sup>	43.50 <sup>129</sup>	29.126 <sup>319</sup>	16.53 <sup>47</sup>
26.8	14.607 <sup>320</sup>	8.38 <sup>125</sup>	48.985 <sup>321</sup>	42.21 <sup>133</sup>	29.445 <sup>331</sup>	17.00 <sup>100</sup>
Nov. 5.7	14.927 <sup>326</sup>	7.13 <sup>129</sup>	49.306 <sup>329</sup>	40.88 <sup>133</sup>	29.776 <sup>338</sup>	18.00 <sup>154</sup>
15.7	15.253 <sup>324</sup>	5.84 <sup>124</sup>	49.635 <sup>329</sup>	39.55 <sup>127</sup>	30.114 <sup>331</sup>	19.54 <sup>202</sup>
25.7	15.577 <sup>315</sup>	4.60 <sup>113</sup>	49.964 <sup>320</sup>	38.28 <sup>119</sup>	30.445 <sup>317</sup>	21.56 <sup>242</sup>
Dec. 5.6	15.892 <sup>294</sup>	3.47 <sup>100</sup>	50.284 <sup>303</sup>	37.09 <sup>103</sup>	30.762 <sup>293</sup>	23.98 <sup>276</sup>
15.6	16.186 <sup>265</sup>	2.47 <sup>84</sup>	50.587 <sup>274</sup>	36.06 <sup>84</sup>	31.055 <sup>257</sup>	26.74 <sup>298</sup>
25.6	16.451 <sup>226</sup>	1.63 <sup>65</sup>	50.861 <sup>238</sup>	35.22 <sup>63</sup>	31.312 <sup>213</sup>	29.72 <sup>313</sup>
35.6	16.677	0.98	51.099	34.59	31.525	32.85
Mean Place	12.078	25.51	46.536	59.99	27.440	16.17
Sec $\delta$ , Tan $\delta$	1.069	+0.378	1.077	+0.399	1.191	-0.647
L $\alpha$ , L $\delta$	+0.01	-0.2	+0.01	-0.3	-0.01	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.02	+0.8	+0.02	+0.8	-0.03	+0.8
AUTHORITY	A. E.		A. E.		A. E.	

# 332 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	δ Argûs. Mag. 2.0		ε Hydræ. Mag. 3.5		ζ Hydræ. Mag. 3.3	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 8	<sup>m</sup> 42	<sup>h</sup> 8	<sup>m</sup> 42	<sup>h</sup> 8	<sup>m</sup> 51
Jan. 0.6	35.486	20.77	40.242	70.10	17.756	24.87
10.6	35.692	24.43	40.439	68.71	17.960	23.44
20.5	35.826	28.16	40.589	67.50	18.118	22.17
30.5	35.881	31.87	40.690	66.50	18.227	21.14
Feb. 9.5	35.861	35.44	40.740	65.72	18.284	20.31
19.5	35.768	38.77	40.739	65.15	18.292	19.71
Mar. 1.4	35.609	41.83	40.692	64.79	18.253	19.32
11.4	35.392	44.53	40.605	64.61	18.173	19.11
21.4	35.129	46.82	40.486	64.60	18.061	19.09
31.3	34.831	48.66	40.343	64.73	17.923	19.21
Apr. 10.3	34.509	50.02	40.186	64.98	17.772	19.44
20.3	34.173	50.87	40.024	65.32	17.613	19.78
30.3	33.835	51.22	39.866	65.74	17.457	20.20
May 10.2	33.507	51.06	39.718	66.22	17.309	20.71
20.2	33.195	50.39	39.587	66.76	17.177	21.26
30.2	32.912	49.25	39.478	67.34	17.064	21.85
June 9.2	32.660	47.66	39.394	67.95	16.977	22.48
19.1	32.448	45.65	39.338	68.59	16.915	23.13
29.1	32.280	43.29	39.310	69.23	16.880	23.78
July 9.1	32.160	40.64	39.311	69.86	16.875	24.42
19.0	32.093	37.77	39.342	70.46	16.898	25.03
29.0	32.081	34.76	39.402	71.00	16.952	25.57
Aug. 8.0	32.126	31.72	39.491	71.45	17.031	26.04
18.0	32.227	28.73	39.608	71.79	17.139	26.38
27.9	32.388	25.92	39.752	71.97	17.276	26.58
Sept. 6.9	32.607	23.36	39.923	71.97	17.438	26.58
16.9	32.879	21.20	40.120	71.77	17.630	26.38
26.9	33.201	19.48	40.343	71.34	17.846	25.95
Oct. 6.8	33.566	18.29	40.589	70.67	18.088	25.27
16.8	33.967	17.72	40.857	69.76	18.351	24.36
26.8	34.395	17.77	41.143	68.61	18.636	23.21
Nov. 5.7	34.838	18.47	41.443	67.28	18.935	21.86
15.7	35.281	19.77	41.751	65.80	19.243	20.34
25.7	35.711	21.69	42.060	64.19	19.552	18.71
5.7	36.116	24.16	42.361	62.53	19.857	17.01
Dec. 15.6	36.481	27.11	42.644	60.88	20.145	15.32
25.6	36.793	30.39	42.901	59.30	20.408	13.67
35.6	37.041	33.93	43.123	57.83	20.638	12.15
Mean Place	32.760	20.22	38.831	81.19	16.374	35.76
Sec δ, Tan δ	1.719	-1.398	1.007	+0.118	1.006	+0.109
L α, L δ	-0.03	-0.3	0.00	-0.3	0.00	-0.3
ω α, ω δ	-0.06	+0.8	+0.01	+0.8	0.00	+0.7
AUTHORITY	A. E.		A. N.		A. E.	

# APPARENT PLACES OF STARS, 1922. 333

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ι Ursæ Majoris. Mag. 3.1		α Cancri. Mag. 4.3		κ Cancri. Mag. 5.1	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 8 <sup>m</sup> 53	<sup>°</sup> 48 <sup>'</sup> 20	<sup>h</sup> 8 <sup>m</sup> 54	<sup>°</sup> 12 <sup>'</sup> 9	<sup>h</sup> 9 <sup>m</sup> 3	<sup>°</sup> 10 <sup>'</sup> 58
Jan. 0.6	54.139 <sup>293</sup>	38.37 <sup>91</sup>	14.769 <sup>211</sup>	25.71 <sup>114</sup>	32.805 <sup>218</sup>	46.83 <sup>123</sup>
10.6	54.432 <sup>227</sup>	39.28 <sup>123</sup>	14.980 <sup>167</sup>	24.57 <sup>91</sup>	33.023 <sup>175</sup>	45.60 <sup>101</sup>
20.5	54.659 <sup>157</sup>	40.51 <sup>149</sup>	15.147 <sup>116</sup>	23.66 <sup>68</sup>	33.198 <sup>124</sup>	44.59 <sup>80</sup>
30.5	54.816 <sup>82</sup>	42.00 <sup>169</sup>	15.263 <sup>63</sup>	22.98 <sup>46</sup>	33.322 <sup>73</sup>	43.79 <sup>55</sup>
Feb. 9.5	54.898 <sup>11</sup>	43.69 <sup>183</sup>	15.326 <sup>13</sup>	22.52 <sup>26</sup>	33.395 <sup>21</sup>	43.24 <sup>33</sup>
19.5	54.909 <sup>64</sup>	45.52 <sup>184</sup>	15.339 <sup>35</sup>	22.26 <sup>6</sup>	33.416 <sup>26</sup>	42.91 <sup>13</sup>
Mar. 1.4	54.845 <sup>123</sup>	47.36 <sup>180</sup>	15.304 <sup>78</sup>	22.20 <sup>11</sup>	33.390 <sup>69</sup>	42.78 <sup>5</sup>
11.4	54.722 <sup>176</sup>	49.16 <sup>167</sup>	15.226 <sup>111</sup>	22.31 <sup>22</sup>	33.321 <sup>104</sup>	42.83 <sup>20</sup>
21.4	54.546 <sup>213</sup>	50.83 <sup>145</sup>	15.115 <sup>137</sup>	22.53 <sup>34</sup>	33.217 <sup>130</sup>	43.03 <sup>30</sup>
31.3	54.333 <sup>241</sup>	52.28 <sup>120</sup>	14.978 <sup>152</sup>	22.87 <sup>41</sup>	33.087 <sup>149</sup>	43.33 <sup>40</sup>
Apr. 10.3	54.092 <sup>256</sup>	53.48 <sup>89</sup>	14.826 <sup>161</sup>	23.28 <sup>46</sup>	32.938 <sup>156</sup>	43.73 <sup>45</sup>
20.3	53.836 <sup>255</sup>	54.37 <sup>57</sup>	14.665 <sup>157</sup>	23.74 <sup>48</sup>	32.782 <sup>156</sup>	44.18 <sup>49</sup>
30.3	53.581 <sup>243</sup>	54.94 <sup>25</sup>	14.508 <sup>150</sup>	24.22 <sup>49</sup>	32.626 <sup>149</sup>	44.67 <sup>51</sup>
May 10.2	53.338 <sup>223</sup>	55.19 <sup>10</sup>	14.358 <sup>134</sup>	24.71 <sup>49</sup>	32.477 <sup>136</sup>	45.18 <sup>51</sup>
20.2	53.115 <sup>194</sup>	55.09 <sup>46</sup>	14.224 <sup>115</sup>	25.20 <sup>46</sup>	32.341 <sup>116</sup>	45.69 <sup>51</sup>
30.2	52.921 <sup>158</sup>	54.63 <sup>77</sup>	14.109 <sup>89</sup>	25.66 <sup>46</sup>	32.225 <sup>94</sup>	46.20 <sup>49</sup>
June 9.2	52.763 <sup>118</sup>	53.86 <sup>104</sup>	14.020 <sup>63</sup>	26.12 <sup>42</sup>	32.131 <sup>68</sup>	46.69 <sup>48</sup>
19.1	52.645 <sup>72</sup>	52.82 <sup>131</sup>	13.957 <sup>36</sup>	26.54 <sup>39</sup>	32.063 <sup>41</sup>	47.17 <sup>44</sup>
29.1	52.573 <sup>30</sup>	51.51 <sup>152</sup>	13.921 <sup>5</sup>	26.93 <sup>33</sup>	32.022 <sup>14</sup>	47.61 <sup>39</sup>
July 9.1	52.543 <sup>17</sup>	49.99 <sup>170</sup>	13.916 <sup>23</sup>	27.26 <sup>28</sup>	32.008 <sup>14</sup>	48.00 <sup>34</sup>
19.0	52.560 <sup>65</sup>	48.29 <sup>185</sup>	13.939 <sup>53</sup>	27.54 <sup>21</sup>	32.022 <sup>44</sup>	48.34 <sup>25</sup>
29.0	52.625 <sup>108</sup>	46.44 <sup>197</sup>	13.992 <sup>82</sup>	27.75 <sup>11</sup>	32.066 <sup>71</sup>	48.59 <sup>16</sup>
Aug. 8.0	52.733 <sup>149</sup>	44.47 <sup>205</sup>	14.074 <sup>108</sup>	27.86 <sup>2</sup>	32.137 <sup>99</sup>	48.75 <sup>4</sup>
18.0	52.882 <sup>195</sup>	42.42 <sup>207</sup>	14.182 <sup>139</sup>	27.84 <sup>14</sup>	32.236 <sup>128</sup>	48.79 <sup>11</sup>
27.9	53.077 <sup>236</sup>	40.35 <sup>212</sup>	14.321 <sup>164</sup>	27.70 <sup>32</sup>	32.364 <sup>155</sup>	48.68 <sup>28</sup>
Sept. 6.9	53.313 <sup>276</sup>	38.23 <sup>209</sup>	14.485 <sup>193</sup>	27.38 <sup>50</sup>	32.519 <sup>183</sup>	48.40 <sup>47</sup>
16.9	53.589 <sup>312</sup>	36.14 <sup>202</sup>	14.678 <sup>219</sup>	26.88 <sup>68</sup>	32.702 <sup>211</sup>	47.93 <sup>66</sup>
26.9	53.901 <sup>347</sup>	34.12 <sup>191</sup>	14.897 <sup>244</sup>	26.20 <sup>88</sup>	32.913 <sup>237</sup>	47.27 <sup>88</sup>
Oct. 6.8	54.248 <sup>378</sup>	32.21 <sup>179</sup>	15.141 <sup>269</sup>	25.32 <sup>108</sup>	33.150 <sup>262</sup>	46.39 <sup>107</sup>
16.8	54.626 <sup>404</sup>	30.42 <sup>161</sup>	15.410 <sup>288</sup>	24.24 <sup>125</sup>	33.412 <sup>284</sup>	45.32 <sup>127</sup>
26.8	55.030 <sup>425</sup>	28.81 <sup>136</sup>	15.698 <sup>303</sup>	22.99 <sup>139</sup>	33.696 <sup>301</sup>	44.05 <sup>143</sup>
Nov. 5.7	55.455 <sup>438</sup>	27.45 <sup>111</sup>	16.001 <sup>315</sup>	21.60 <sup>150</sup>	33.997 <sup>313</sup>	42.62 <sup>154</sup>
15.7	55.893 <sup>441</sup>	26.34 <sup>77</sup>	16.316 <sup>316</sup>	20.10 <sup>155</sup>	34.310 <sup>316</sup>	41.08 <sup>161</sup>
25.7	56.334 <sup>429</sup>	25.57 <sup>43</sup>	16.632 <sup>312</sup>	18.55 <sup>155</sup>	34.626 <sup>313</sup>	39.47 <sup>161</sup>
Dec. 5.7	56.763 <sup>410</sup>	25.14 <sup>7</sup>	16.944 <sup>296</sup>	17.00 <sup>150</sup>	34.939 <sup>300</sup>	37.86 <sup>158</sup>
15.6	57.173 <sup>375</sup>	25.07 <sup>31</sup>	17.240 <sup>272</sup>	15.50 <sup>139</sup>	35.239 <sup>276</sup>	36.28 <sup>148</sup>
25.6	57.548 <sup>327</sup>	25.38 <sup>70</sup>	17.512 <sup>236</sup>	14.11 <sup>123</sup>	35.515 <sup>243</sup>	34.80 <sup>132</sup>
35.6	57.875	26.08	17.748	12.88	35.758	33.48
Mean Place	52.562	56.10	13.414	37.70	31.485	58.51
Sec δ, Tan δ	1.505	+1.124	1.023	+0.216	1.019	+0.194
L α, L δ	+0.02	-0.3	0.00	-0.3	0.00	-0.3
ω α, ω δ	+0.05	+0.7	+0.01	+0.7	+0.01	+0.7
AUTHORITY	A. E.		A. E.			

# 334 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ξ Cancri. Mag. 5.2		λ Argûs. Mag. 2.2		β Argûs. Mag. 1.8	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 9 <sup>m</sup> 4	<sup>°</sup> 22 <sup>'</sup> 21	<sup>h</sup> 9 <sup>m</sup> 5	<sup>°</sup> 43 <sup>'</sup> 7	<sup>h</sup> 9 <sup>m</sup> 12	<sup>°</sup> 69 <sup>'</sup> 23
Jan. 0.6	54.022 <sup>235</sup>	28.78 <sup>60</sup>	9.703 <sup>220</sup>	2.75 <sup>343</sup>	25.34 <sup>35</sup>	41.16 <sup>357</sup>
10.6	54.257 <sup>187</sup>	28.18 <sup>34</sup>	9.923 <sup>162</sup>	6.18 <sup>348</sup>	25.69 <sup>23</sup>	44.73 <sup>379</sup>
20.6	54.444 <sup>135</sup>	27.84 <sup>8</sup>	10.085 <sup>101</sup>	9.66 <sup>344</sup>	25.92 <sup>11</sup>	48.52 <sup>386</sup>
30.5	54.579 <sup>81</sup>	27.76 <sup>16</sup>	10.186 <sup>35</sup>	13.10 <sup>334</sup>	26.03 <sup>0</sup>	52.38 <sup>384</sup>
Feb. 9.5	54.660 <sup>26</sup>	27.92 <sup>36</sup>	10.221 <sup>24</sup>	16.44 <sup>314</sup>	26.03 <sup>12</sup>	56.22 <sup>371</sup>
19.5	54.686 <sup>25</sup>	28.28 <sup>53</sup>	10.197 <sup>82</sup>	19.58 <sup>285</sup>	25.91 <sup>23</sup>	59.93 <sup>350</sup>
Mar. 1.4	54.661 <sup>71</sup>	28.81 <sup>65</sup>	10.115 <sup>131</sup>	22.43 <sup>254</sup>	25.68 <sup>32</sup>	63.43 <sup>324</sup>
11.4	54.590 <sup>109</sup>	29.46 <sup>72</sup>	9.984 <sup>171</sup>	24.97 <sup>215</sup>	25.36 <sup>40</sup>	66.67 <sup>288</sup>
21.4	54.481 <sup>138</sup>	30.18 <sup>75</sup>	9.813 <sup>205</sup>	27.12 <sup>176</sup>	24.96 <sup>47</sup>	69.55 <sup>249</sup>
31.4	54.343 <sup>158</sup>	30.93 <sup>73</sup>	9.608 <sup>227</sup>	28.88 <sup>132</sup>	24.49 <sup>53</sup>	72.04 <sup>199</sup>
Apr. 10.3	54.185 <sup>167</sup>	31.66 <sup>68</sup>	9.381 <sup>242</sup>	30.20 <sup>85</sup>	23.96 <sup>55</sup>	74.03 <sup>153</sup>
20.3	54.018 <sup>167</sup>	32.34 <sup>60</sup>	9.139 <sup>244</sup>	31.05 <sup>41</sup>	23.41 <sup>58</sup>	75.56 <sup>100</sup>
30.3	53.851 <sup>160</sup>	32.94 <sup>50</sup>	8.895 <sup>240</sup>	31.46 <sup>5</sup>	22.83 <sup>58</sup>	76.56 <sup>46</sup>
May 10.3	53.691 <sup>145</sup>	33.44 <sup>39</sup>	8.655 <sup>229</sup>	31.41 <sup>50</sup>	22.25 <sup>57</sup>	77.02 <sup>5</sup>
20.2	53.546 <sup>125</sup>	33.83 <sup>28</sup>	8.426 <sup>211</sup>	30.91 <sup>97</sup>	21.68 <sup>55</sup>	76.97 <sup>62</sup>
30.2	53.421 <sup>101</sup>	34.11 <sup>16</sup>	8.215 <sup>186</sup>	29.94 <sup>134</sup>	21.13 <sup>51</sup>	76.35 <sup>111</sup>
June 9.2	53.320 <sup>74</sup>	34.27 <sup>5</sup>	8.029 <sup>160</sup>	28.60 <sup>173</sup>	20.62 <sup>47</sup>	75.24 <sup>161</sup>
19.1	53.246 <sup>45</sup>	34.32 <sup>6</sup>	7.869 <sup>128</sup>	26.87 <sup>207</sup>	20.15 <sup>40</sup>	73.63 <sup>207</sup>
29.1	53.201 <sup>15</sup>	34.26 <sup>18</sup>	7.741 <sup>88</sup>	24.80 <sup>234</sup>	19.75 <sup>33</sup>	71.56 <sup>243</sup>
July 9.1	53.186 <sup>15</sup>	34.08 <sup>28</sup>	7.653 <sup>54</sup>	22.46 <sup>254</sup>	19.42 <sup>24</sup>	69.13 <sup>274</sup>
19.1	53.201 <sup>47</sup>	33.80 <sup>40</sup>	7.599 <sup>13</sup>	19.92 <sup>268</sup>	19.18 <sup>16</sup>	66.39 <sup>298</sup>
29.0	53.248 <sup>76</sup>	33.40 <sup>52</sup>	7.586 <sup>29</sup>	17.24 <sup>273</sup>	19.02 <sup>7</sup>	63.41 <sup>313</sup>
Aug. 8.0	53.324 <sup>106</sup>	32.88 <sup>64</sup>	7.615 <sup>74</sup>	14.51 <sup>268</sup>	18.95 <sup>4</sup>	60.28 <sup>318</sup>
18.0	53.430 <sup>135</sup>	32.24 <sup>77</sup>	7.689 <sup>117</sup>	11.83 <sup>256</sup>	18.99 <sup>14</sup>	57.10 <sup>313</sup>
27.9	53.565 <sup>165</sup>	31.47 <sup>90</sup>	7.806 <sup>161</sup>	9.27 <sup>229</sup>	19.13 <sup>25</sup>	53.97 <sup>294</sup>
Sept. 6.9	53.730 <sup>194</sup>	30.57 <sup>103</sup>	7.967 <sup>207</sup>	6.98 <sup>198</sup>	19.38 <sup>34</sup>	51.03 <sup>266</sup>
16.9	53.924 <sup>223</sup>	29.54 <sup>116</sup>	8.174 <sup>247</sup>	5.00 <sup>158</sup>	19.72 <sup>44</sup>	48.37 <sup>226</sup>
26.9	54.147 <sup>250</sup>	28.38 <sup>128</sup>	8.421 <sup>287</sup>	3.42 <sup>108</sup>	20.16 <sup>52</sup>	46.11 <sup>178</sup>
Oct. 6.8	54.397 <sup>277</sup>	27.10 <sup>138</sup>	8.708 <sup>321</sup>	2.34 <sup>53</sup>	20.68 <sup>60</sup>	44.33 <sup>120</sup>
16.8	54.674 <sup>299</sup>	25.72 <sup>146</sup>	9.029 <sup>350</sup>	1.81 <sup>6</sup>	21.28 <sup>64</sup>	43.13 <sup>60</sup>
26.8	54.973 <sup>317</sup>	24.26 <sup>150</sup>	9.379 <sup>366</sup>	1.87 <sup>65</sup>	21.92 <sup>68</sup>	42.53 <sup>5</sup>
Nov. 5.8	55.290 <sup>330</sup>	22.76 <sup>150</sup>	9.745 <sup>377</sup>	2.52 <sup>125</sup>	22.60 <sup>69</sup>	42.58 <sup>74</sup>
15.7	55.620 <sup>335</sup>	21.26 <sup>144</sup>	10.122 <sup>375</sup>	3.77 <sup>181</sup>	23.29 <sup>67</sup>	43.32 <sup>139</sup>
25.7	55.955 <sup>332</sup>	19.82 <sup>132</sup>	10.497 <sup>363</sup>	5.58 <sup>230</sup>	23.96 <sup>64</sup>	44.71 <sup>202</sup>
Dec. 5.7	56.287 <sup>317</sup>	18.50 <sup>118</sup>	10.860 <sup>334</sup>	7.88 <sup>271</sup>	24.60 <sup>58</sup>	46.73 <sup>255</sup>
15.6	56.604 <sup>296</sup>	17.32 <sup>97</sup>	11.194 <sup>300</sup>	10.59 <sup>306</sup>	25.18 <sup>51</sup>	49.28 <sup>302</sup>
25.6	56.900 <sup>259</sup>	16.35 <sup>74</sup>	11.494 <sup>254</sup>	13.65 <sup>331</sup>	25.69 <sup>40</sup>	52.30 <sup>337</sup>
35.6	57.159	15.61	11.748	16.96	26.09	55.67
Mean Place	52.722	42.71	7.582	2.24	21.01	44.94
Sec δ, Tan δ	1.081	+0.411	1.370	-0.936	2.842	-2.660
L α, L δ	+0.01	-0.3	-0.02	-0.3	-0.05	-0.3
ω α, ω δ	+0.02	+0.7	-0.04	+0.7	-0.13	+0.7
AUTHORITY			A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 335

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	83 Cancri. Mag. 6.6		ε Argūs. Mag. 2.3		40 Lynceis. Mag. 3.3	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	h m 9 14	18 1	h m 9 14	58 56	h m 9 16	34 42
Jan.	0.6 39.153 <sup>234</sup> 10.6 39.387 <sup>192</sup> 20.6 39.579 <sup>142</sup> 30.5 39.721 <sup>88</sup>	59.40 <sup>89</sup> 58.51 <sup>64</sup> 57.87 <sup>37</sup> 57.50 <sup>14</sup>	63.074 <sup>278</sup> 63.352 <sup>198</sup> 63.550 <sup>116</sup> 63.666 <sup>31</sup>	48.44 <sup>357</sup> 52.01 <sup>373</sup> 55.74 <sup>379</sup> 59.53 <sup>373</sup>	19.790 <sup>267</sup> 20.057 <sup>219</sup> 20.276 <sup>161</sup> 20.437 <sup>103</sup>	67.49 <sup>5</sup> 67.54 <sup>32</sup> 67.86 <sup>65</sup> 68.51 <sup>88</sup>
Feb.	9.5 39.809 <sup>33</sup> 19.5 39.842 <sup>15</sup>	57.36 <sup>8</sup> 57.44 <sup>27</sup>	63.697 <sup>51</sup> 63.646 <sup>126</sup>	63.26 <sup>358</sup> 66.84 <sup>336</sup>	20.540 <sup>39</sup> 20.579 <sup>19</sup>	69.39 <sup>109</sup> 70.48 <sup>122</sup>
Mar.	1.4 39.827 <sup>60</sup> 11.4 39.767 <sup>100</sup> 21.4 39.667 <sup>126</sup> 31.4 39.541 <sup>147</sup>	57.71 <sup>44</sup> 58.15 <sup>54</sup> 58.69 <sup>59</sup> 59.28 <sup>64</sup>	63.520 <sup>195</sup> 63.325 <sup>252</sup> 63.073 <sup>300</sup> 62.773 <sup>334</sup>	70.20 <sup>306</sup> 73.26 <sup>270</sup> 75.96 <sup>228</sup> 78.24 <sup>183</sup>	20.560 <sup>70</sup> 20.490 <sup>113</sup> 20.377 <sup>151</sup> 20.226 <sup>176</sup>	71.70 <sup>131</sup> 73.01 <sup>130</sup> 74.31 <sup>122</sup> 75.53 <sup>114</sup>
Apr.	10.3 39.394 <sup>157</sup> 20.3 39.237 <sup>160</sup> 30.3 39.077 <sup>154</sup> 10.3 38.923 <sup>142</sup>	59.92 <sup>63</sup> 60.55 <sup>61</sup> 61.16 <sup>55</sup> 61.71 <sup>47</sup>	62.439 <sup>357</sup> 62.082 <sup>369</sup> 61.713 <sup>370</sup> 61.343 <sup>361</sup>	80.07 <sup>135</sup> 81.42 <sup>84</sup> 82.26 <sup>33</sup> 82.59 <sup>19</sup>	20.050 <sup>186</sup> 19.864 <sup>191</sup> 19.673 <sup>186</sup> 19.487 <sup>172</sup>	76.67 <sup>94</sup> 77.61 <sup>77</sup> 78.38 <sup>52</sup> 78.90 <sup>33</sup>
May	20.2 38.781 <sup>125</sup> 30.2 38.656 <sup>102</sup> 9.2 38.554 <sup>77</sup> 19.1 38.477 <sup>50</sup>	62.57 <sup>31</sup> 62.18 <sup>39</sup> 62.88 <sup>23</sup> 63.11 <sup>15</sup>	60.982 <sup>342</sup> 60.640 <sup>317</sup> 60.323 <sup>282</sup> 60.041 <sup>240</sup>	82.40 <sup>71</sup> 81.69 <sup>119</sup> 80.50 <sup>165</sup> 78.85 <sup>207</sup>	19.315 <sup>155</sup> 19.160 <sup>129</sup> 19.031 <sup>99</sup> 18.932 <sup>65</sup>	79.23 <sup>6</sup> 79.29 <sup>16</sup> 79.13 <sup>40</sup> 78.73 <sup>60</sup>
June	29.1 38.427 <sup>23</sup> 9.1 38.404 <sup>6</sup> 19.1 38.410 <sup>34</sup> 29.0 38.444 <sup>64</sup>	63.26 <sup>3</sup> 63.29 <sup>6</sup> 63.23 <sup>17</sup> 63.06 <sup>27</sup>	59.801 <sup>193</sup> 59.608 <sup>138</sup> 59.470 <sup>81</sup> 59.389 <sup>18</sup>	76.78 <sup>242</sup> 74.36 <sup>271</sup> 71.65 <sup>292</sup> 68.73 <sup>304</sup>	18.867 <sup>33</sup> 18.834 <sup>0</sup> 18.834 <sup>34</sup> 18.868 <sup>71</sup>	78.13 <sup>78</sup> 77.35 <sup>95</sup> 76.40 <sup>110</sup> 75.30 <sup>125</sup>
Aug.	18.0 38.602 <sup>121</sup> 27.9 38.723 <sup>150</sup> 6.9 38.873 <sup>181</sup>	62.37 <sup>55</sup> 61.82 <sup>70</sup> 61.12 <sup>87</sup>	59.371 <sup>48</sup> 59.419 <sup>115</sup> 59.534 <sup>183</sup>	65.69 <sup>305</sup> 62.64 <sup>298</sup> 59.66 <sup>278</sup>	18.939 <sup>102</sup> 19.041 <sup>138</sup> 19.179 <sup>168</sup>	74.05 <sup>138</sup> 72.67 <sup>150</sup> 71.17 <sup>159</sup>
Sept.	16.9 39.054 <sup>208</sup> 26.9 39.262 <sup>239</sup> 6.8 39.501 <sup>263</sup>	60.25 <sup>102</sup> 59.23 <sup>118</sup> 58.05 <sup>133</sup>	59.967 <sup>313</sup> 60.280 <sup>370</sup> 60.650 <sup>420</sup>	54.41 <sup>208</sup> 52.33 <sup>159</sup> 50.74 <sup>102</sup>	19.551 <sup>240</sup> 19.791 <sup>267</sup> 20.058 <sup>299</sup>	67.91 <sup>172</sup> 66.19 <sup>177</sup> 64.42 <sup>175</sup>
Oct.	16.8 39.764 <sup>287</sup> 26.8 40.051 <sup>307</sup> 5.8 40.358 <sup>322</sup>	55.28 <sup>144</sup> 55.28 <sup>153</sup> 53.75 <sup>157</sup>	61.529 <sup>486</sup> 62.015 <sup>497</sup> 62.512 <sup>494</sup>	49.30 <sup>24</sup> 49.54 <sup>90</sup> 50.44 <sup>153</sup>	20.682 <sup>347</sup> 21.029 <sup>365</sup> 21.394 <sup>370</sup>	60.95 <sup>164</sup> 59.31 <sup>149</sup> 57.82 <sup>132</sup>
Nov.	15.7 40.680 <sup>327</sup> 25.7 41.007 <sup>326</sup> 5.7 41.333 <sup>314</sup>	52.18 <sup>157</sup> 50.61 <sup>150</sup> 49.11 <sup>138</sup>	63.006 <sup>473</sup> 63.479 <sup>436</sup> 63.915 <sup>385</sup>	51.97 <sup>211</sup> 54.08 <sup>263</sup> 56.71 <sup>307</sup>	21.764 <sup>368</sup> 22.132 <sup>356</sup> 22.488 <sup>330</sup>	56.50 <sup>107</sup> 55.43 <sup>79</sup> 54.64 <sup>50</sup>
Dec.	15.6 41.647 <sup>291</sup> 25.6 41.938 <sup>262</sup> 35.6 42.200 <sup>262</sup>	47.73 <sup>124</sup> 46.49 <sup>102</sup> 45.47 <sup>102</sup>	64.300 <sup>324</sup> 64.624 <sup>324</sup>	59.78 <sup>344</sup> 63.22 <sup>344</sup>	22.818 <sup>298</sup> 23.116 <sup>298</sup>	54.14 <sup>17</sup> 53.97 <sup>17</sup>
Mean Place	37.896	72.44	60.099	51.17	18.516	83.77
Sec δ, Tan δ	1.052	+0.326	1.939	-1.661	1.217	+0.693
L α, L δ	+0.01	-0.3	-0.03	-0.3	+0.01	-0.3
ω α, ω δ	+0.02	+0.7	-0.08	+0.7	+0.03	+0.7
AUTHORITY	A. E.		A. N.		A. E.	

# 336 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\lambda$ Mali. Mag. 4·9		$\kappa$ Argüs. Mag. 2·6		$\alpha$ Hydræ. Mag. 2·2	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 9 <sup>m</sup> 18	<sup>°</sup> 25 <sup>'</sup> 37	<sup>h</sup> 9 <sup>m</sup> 19	<sup>°</sup> 54 <sup>'</sup> 40	<sup>h</sup> 9 <sup>m</sup> 23	<sup>°</sup> 8 <sup>'</sup> 19
Jan. 0·6	3·767 <sup>220</sup>	62·91 <sup>291</sup>	44·435 <sup>268</sup>	36·14 <sup>351</sup>	46·664 <sup>224</sup>	17·92 <sup>223</sup>
10·6	3·987 <sup>173</sup>	65·82 <sup>291</sup>	44·703 <sup>198</sup>	39·65 <sup>369</sup>	46·888 <sup>178</sup>	20·15 <sup>213</sup>
20·6	4·160 <sup>121</sup>	68·73 <sup>282</sup>	44·901 <sup>123</sup>	43·34 <sup>371</sup>	47·066 <sup>133</sup>	22·28 <sup>196</sup>
30·5	4·281 <sup>67</sup>	71·55 <sup>266</sup>	45·024 <sup>46</sup>	47·05 <sup>366</sup>	47·199 <sup>82</sup>	24·24 <sup>177</sup>
Feb. 9·5	4·348 <sup>15</sup>	74·21 <sup>245</sup>	45·070 <sup>27</sup>	50·71 <sup>353</sup>	47·281 <sup>34</sup>	26·01 <sup>153</sup>
19·5	4·363 <sup>34</sup>	76·66 <sup>218</sup>	45·043 <sup>99</sup>	54·24 <sup>328</sup>	47·315 <sup>13</sup>	27·54 <sup>128</sup>
Mar. 1·4	4·329 <sup>78</sup>	78·84 <sup>189</sup>	44·944 <sup>160</sup>	57·52 <sup>299</sup>	47·302 <sup>55</sup>	28·82 <sup>102</sup>
11·4	4·251 <sup>114</sup>	80·73 <sup>156</sup>	44·784 <sup>211</sup>	60·51 <sup>262</sup>	47·247 <sup>92</sup>	29·84 <sup>76</sup>
21·4	4·137 <sup>144</sup>	82·29 <sup>121</sup>	44·573 <sup>255</sup>	63·13 <sup>222</sup>	47·155 <sup>119</sup>	30·60 <sup>51</sup>
31·4	3·993 <sup>163</sup>	83·50 <sup>87</sup>	44·318 <sup>286</sup>	65·35 <sup>178</sup>	47·036 <sup>135</sup>	31·11 <sup>29</sup>
Apr. 10·3	3·830 <sup>175</sup>	84·37 <sup>52</sup>	44·032 <sup>308</sup>	67·13 <sup>132</sup>	46·901 <sup>149</sup>	31·40 <sup>1</sup>
20·3	3·655 <sup>178</sup>	84·89 <sup>16</sup>	43·724 <sup>319</sup>	68·45 <sup>81</sup>	46·752 <sup>153</sup>	31·41 <sup>17</sup>
30·3	3·477 <sup>175</sup>	85·05 <sup>19</sup>	43·405 <sup>320</sup>	69·26 <sup>30</sup>	46·599 <sup>148</sup>	31·24 <sup>40</sup>
May 10·3	3·302 <sup>165</sup>	84·86 <sup>53</sup>	43·085 <sup>311</sup>	69·56 <sup>19</sup>	46·451 <sup>140</sup>	30·84 <sup>58</sup>
20·2	3·137 <sup>151</sup>	84·33 <sup>85</sup>	42·774 <sup>297</sup>	69·37 <sup>70</sup>	46·311 <sup>125</sup>	30·26 <sup>73</sup>
30·2	2·986 <sup>131</sup>	83·48 <sup>115</sup>	42·477 <sup>271</sup>	68·67 <sup>116</sup>	46·186 <sup>110</sup>	29·53 <sup>91</sup>
June 9·2	2·855 <sup>109</sup>	82·33 <sup>142</sup>	42·206 <sup>243</sup>	67·51 <sup>161</sup>	46·076 <sup>86</sup>	28·62 <sup>104</sup>
19·1	2·746 <sup>85</sup>	80·91 <sup>165</sup>	41·963 <sup>207</sup>	65·90 <sup>201</sup>	45·990 <sup>62</sup>	27·58 <sup>114</sup>
29·1	2·661 <sup>56</sup>	79·26 <sup>185</sup>	41·756 <sup>163</sup>	63·89 <sup>239</sup>	45·928 <sup>40</sup>	26·44 <sup>122</sup>
July 9·1	2·605 <sup>28</sup>	77·41 <sup>197</sup>	41·593 <sup>116</sup>	61·50 <sup>263</sup>	45·888 <sup>13</sup>	25·22 <sup>126</sup>
19·1	2·577 <sup>2</sup>	75·44 <sup>205</sup>	41·477 <sup>68</sup>	58·87 <sup>283</sup>	45·875 <sup>14</sup>	23·96 <sup>126</sup>
29·0	2·579 <sup>34</sup>	73·39 <sup>206</sup>	41·409 <sup>12</sup>	56·04 <sup>297</sup>	45·889 <sup>42</sup>	22·70 <sup>123</sup>
Aug. 8·0	2·613 <sup>68</sup>	71·33 <sup>199</sup>	41·397 <sup>45</sup>	53·07 <sup>296</sup>	45·931 <sup>70</sup>	21·47 <sup>112</sup>
18·0	2·681 <sup>100</sup>	69·34 <sup>185</sup>	41·442 <sup>105</sup>	50·11 <sup>290</sup>	46·001 <sup>100</sup>	20·35 <sup>95</sup>
28·0	2·781 <sup>135</sup>	67·49 <sup>162</sup>	41·547 <sup>162</sup>	47·21 <sup>268</sup>	46·101 <sup>129</sup>	19·40 <sup>73</sup>
Sept. 6·9	2·916 <sup>169</sup>	65·87 <sup>134</sup>	41·709 <sup>223</sup>	44·53 <sup>240</sup>	46·230 <sup>157</sup>	18·67 <sup>50</sup>
16·9	3·085 <sup>203</sup>	64·53 <sup>97</sup>	41·932 <sup>279</sup>	42·13 <sup>201</sup>	46·387 <sup>192</sup>	18·17 <sup>21</sup>
26·9	3·288 <sup>236</sup>	63·56 <sup>55</sup>	42·211 <sup>330</sup>	40·12 <sup>153</sup>	46·579 <sup>219</sup>	17·96 <sup>13</sup>
Oct. 6·9	3·524 <sup>265</sup>	63·01 <sup>9</sup>	42·541 <sup>378</sup>	38·59 <sup>97</sup>	46·798 <sup>243</sup>	18·09 <sup>51</sup>
16·8	3·789 <sup>291</sup>	62·92 <sup>41</sup>	42·919 <sup>415</sup>	37·62 <sup>36</sup>	47·041 <sup>272</sup>	18·60 <sup>84</sup>
26·8	4·080 <sup>311</sup>	63·33 <sup>88</sup>	43·334 <sup>439</sup>	37·26 <sup>28</sup>	47·313 <sup>291</sup>	19·44 <sup>120</sup>
Nov. 5·8	4·391 <sup>324</sup>	64·21 <sup>137</sup>	43·773 <sup>454</sup>	37·54 <sup>92</sup>	47·604 <sup>306</sup>	20·64 <sup>150</sup>
15·7	4·715 <sup>328</sup>	65·58 <sup>180</sup>	44·227 <sup>453</sup>	38·46 <sup>154</sup>	47·910 <sup>311</sup>	22·14 <sup>180</sup>
25·7	5·043 <sup>322</sup>	67·38 <sup>219</sup>	44·680 <sup>438</sup>	40·00 <sup>211</sup>	48·221 <sup>309</sup>	23·94 <sup>202</sup>
Dec. 5·7	5·365 <sup>308</sup>	69·57 <sup>249</sup>	45·118 <sup>407</sup>	42·11 <sup>262</sup>	48·530 <sup>301</sup>	25·96 <sup>216</sup>
15·6	5·673 <sup>280</sup>	72·06 <sup>272</sup>	45·525 <sup>363</sup>	44·73 <sup>302</sup>	48·831 <sup>277</sup>	28·12 <sup>223</sup>
25·6	5·953 <sup>246</sup>	74·78 <sup>285</sup>	45·888 <sup>307</sup>	47·75 <sup>335</sup>	49·108 <sup>245</sup>	30·35 <sup>225</sup>
35·6	6·199	77·63	46·195	51·10	49·353	32·60
Mean Place	2·141	59·77	41·793	38·64	45·294	11·06
Sec $\delta$ , Tan $\delta$	1·109	-0·480	1·730	-1·411	1·011	-0·146
L $\alpha$ , L $\delta$	-0·01	-0·3	-0·02	-0·3	0·00	-0·3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0·02	+0·7	-0·07	+0·7	-0·01	+0·6
AUTHORITY			A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 337

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\psi$ Argûs. Mag. 3·6		$\theta$ Ursæ Majoris. Mag. 3·3		$\xi$ Leonis. Mag. 5·1	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 9 27	<sup>°</sup> <sup>'</sup> 40 7	<sup>h</sup> <sup>m</sup> 9 27	<sup>°</sup> <sup>'</sup> 52 1	<sup>h</sup> <sup>m</sup> 9 27	<sup>°</sup> <sup>'</sup> 11 38
Jan. 0·6	39·427 <sup>243</sup>	29·60 <sup>328</sup>	40·414 <sup>348</sup>	42·41 <sup>84</sup>	45·842 <sup>239</sup>	34·08 <sup>128</sup>
10·6	39·670 <sup>189</sup>	32·88 <sup>337</sup>	40·762 <sup>283</sup>	43·25 <sup>120</sup>	46·081 <sup>197</sup>	32·80 <sup>106</sup>
20·6	39·859 <sup>132</sup>	36·25 <sup>336</sup>	41·045 <sup>213</sup>	44·45 <sup>154</sup>	46·278 <sup>148</sup>	31·74 <sup>81</sup>
30·5	39·991 <sup>69</sup>	39·61 <sup>327</sup>	41·258 <sup>138</sup>	45·99 <sup>182</sup>	46·426 <sup>98</sup>	30·93 <sup>57</sup>
Feb. 9·5	40·060 <sup>11</sup>	42·88 <sup>312</sup>	41·396 <sup>57</sup>	47·81 <sup>199</sup>	46·524 <sup>46</sup>	30·36 <sup>33</sup>
19·5	40·071 <sup>43</sup>	46·00 <sup>285</sup>	41·453 <sup>21</sup>	49·80 <sup>208</sup>	46·570 <sup>3</sup>	30·03 <sup>10</sup>
Mar. 1·5	40·028 <sup>96</sup>	48·85 <sup>256</sup>	41·432 <sup>89</sup>	51·88 <sup>208</sup>	46·567 <sup>47</sup>	29·93 <sup>9</sup>
11·4	39·932 <sup>134</sup>	51·41 <sup>221</sup>	41·343 <sup>151</sup>	53·96 <sup>200</sup>	46·520 <sup>85</sup>	30·02 <sup>25</sup>
21·4	39·798 <sup>171</sup>	53·62 <sup>183</sup>	41·192 <sup>206</sup>	55·96 <sup>180</sup>	46·435 <sup>114</sup>	30·27 <sup>37</sup>
31·4	39·627 <sup>196</sup>	55·45 <sup>142</sup>	40·986 <sup>240</sup>	57·76 <sup>156</sup>	46·321 <sup>134</sup>	30·64 <sup>46</sup>
Apr. 10·3	39·431 <sup>211</sup>	56·87 <sup>101</sup>	40·746 <sup>259</sup>	59·32 <sup>126</sup>	46·187 <sup>147</sup>	31·10 <sup>52</sup>
20·3	39·220 <sup>219</sup>	57·88 <sup>55</sup>	40·487 <sup>272</sup>	60·58 <sup>91</sup>	46·040 <sup>151</sup>	31·62 <sup>54</sup>
30·3	39·001 <sup>222</sup>	58·43 <sup>13</sup>	40·215 <sup>270</sup>	61·49 <sup>55</sup>	45·889 <sup>147</sup>	32·16 <sup>56</sup>
May 10·3	38·779 <sup>213</sup>	58·56 <sup>31</sup>	39·945 <sup>260</sup>	62·04 <sup>14</sup>	45·742 <sup>137</sup>	32·72 <sup>55</sup>
20·2	38·566 <sup>200</sup>	58·25 <sup>73</sup>	39·685 <sup>235</sup>	62·18 <sup>24</sup>	45·605 <sup>123</sup>	33·27 <sup>53</sup>
30·2	38·366 <sup>180</sup>	57·52 <sup>113</sup>	39·450 <sup>204</sup>	61·94 <sup>61</sup>	45·482 <sup>103</sup>	33·80 <sup>51</sup>
June 9·2	38·186 <sup>158</sup>	56·39 <sup>150</sup>	39·246 <sup>169</sup>	61·33 <sup>98</sup>	45·379 <sup>82</sup>	34·31 <sup>46</sup>
19·2	38·028 <sup>133</sup>	54·89 <sup>185</sup>	39·077 <sup>129</sup>	60·35 <sup>126</sup>	45·297 <sup>58</sup>	34·77 <sup>41</sup>
29·1	37·895 <sup>100</sup>	53·04 <sup>212</sup>	38·948 <sup>85</sup>	59·09 <sup>158</sup>	45·239 <sup>32</sup>	35·18 <sup>35</sup>
July 9·1	37·795 <sup>66</sup>	50·92 <sup>235</sup>	38·863 <sup>36</sup>	57·51 <sup>180</sup>	45·207 <sup>6</sup>	35·53 <sup>28</sup>
19·1	37·729 <sup>33</sup>	48·57 <sup>250</sup>	38·827 <sup>11</sup>	55·71 <sup>203</sup>	45·201 <sup>20</sup>	35·81 <sup>19</sup>
29·1	37·696 <sup>7</sup>	46·07 <sup>257</sup>	38·838 <sup>57</sup>	53·68 <sup>220</sup>	45·221 <sup>48</sup>	36·00 <sup>7</sup>
Aug. 8·0	37·703 <sup>48</sup>	43·50 <sup>257</sup>	38·895 <sup>105</sup>	51·48 <sup>233</sup>	45·269 <sup>76</sup>	36·07 <sup>6</sup>
18·0	37·751 <sup>89</sup>	40·93 <sup>245</sup>	39·000 <sup>149</sup>	49·15 <sup>241</sup>	45·345 <sup>104</sup>	36·01 <sup>20</sup>
28·0	37·840 <sup>132</sup>	38·48 <sup>225</sup>	39·149 <sup>198</sup>	46·74 <sup>246</sup>	45·449 <sup>133</sup>	35·81 <sup>38</sup>
Sept. 6·9	37·972 <sup>175</sup>	36·23 <sup>195</sup>	39·347 <sup>245</sup>	44·28 <sup>246</sup>	45·582 <sup>162</sup>	35·43 <sup>57</sup>
16·9	38·147 <sup>218</sup>	34·28 <sup>160</sup>	39·592 <sup>288</sup>	41·82 <sup>243</sup>	45·744 <sup>192</sup>	34·86 <sup>77</sup>
26·9	38·365 <sup>257</sup>	32·68 <sup>115</sup>	39·880 <sup>330</sup>	39·39 <sup>234</sup>	45·936 <sup>220</sup>	34·09 <sup>97</sup>
Oct. 6·9	38·622 <sup>295</sup>	31·53 <sup>61</sup>	40·210 <sup>370</sup>	37·05 <sup>222</sup>	46·156 <sup>248</sup>	33·12 <sup>118</sup>
16·8	38·917 <sup>325</sup>	30·92 <sup>7</sup>	40·580 <sup>406</sup>	34·83 <sup>200</sup>	46·404 <sup>274</sup>	31·94 <sup>136</sup>
26·8	39·242 <sup>351</sup>	30·85 <sup>52</sup>	40·986 <sup>437</sup>	32·83 <sup>178</sup>	46·678 <sup>296</sup>	30·58 <sup>152</sup>
Nov. 5·8	39·593 <sup>365</sup>	31·37 <sup>108</sup>	41·423 <sup>457</sup>	31·05 <sup>147</sup>	46·974 <sup>311</sup>	29·06 <sup>163</sup>
15·8	39·958 <sup>368</sup>	32·45 <sup>163</sup>	41·880 <sup>472</sup>	29·58 <sup>115</sup>	47·285 <sup>320</sup>	27·43 <sup>170</sup>
25·7	40·326 <sup>362</sup>	34·08 <sup>213</sup>	42·352 <sup>466</sup>	28·43 <sup>73</sup>	47·605 <sup>320</sup>	25·73 <sup>171</sup>
Dec. 5·7	40·688 <sup>342</sup>	36·21 <sup>256</sup>	42·818 <sup>454</sup>	27·70 <sup>33</sup>	47·925 <sup>310</sup>	24·02 <sup>166</sup>
15·7	41·030 <sup>313</sup>	38·77 <sup>291</sup>	43·272 <sup>424</sup>	27·37 <sup>12</sup>	48·235 <sup>291</sup>	22·36 <sup>154</sup>
25·6	41·343 <sup>272</sup>	41·68 <sup>315</sup>	43·696 <sup>383</sup>	27·49 <sup>58</sup>	48·526 <sup>262</sup>	20·82 <sup>139</sup>
35·6	41·615	44·83	44·079	28·07	48·788	19·43
Mean Place	37·480	30·14	39·054	61·55	44·629	45·60
Sec $\delta$ , Tan $\delta$	1·308	-0·843	1·625	+1·281	1·021	+0·206
L $\alpha$ , L $\delta$	-0·01	-0·3	+0·02	-0·3	0·00	-0·3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0·04	+0·6	+0·07	+0·6	+0·01	+0·6

AUTHORITY

A. E.

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# 338 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	N Velorum. Mag. 3.0		$\kappa$ Hydræ. Mag. 5.0		$\alpha$ Leonis. Mag. 3.8	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 9 <sup>m</sup> 28 <sup>s</sup>	<sup>°</sup> 56 <sup>'</sup> 41	<sup>h</sup> 9 <sup>m</sup> 36 <sup>s</sup>	<sup>°</sup> 13 <sup>'</sup> 58	<sup>h</sup> 9 <sup>m</sup> 36 <sup>s</sup>	<sup>°</sup> 10 <sup>'</sup> 14
Jan. 0.6	53.855 <sub>291</sub>	19.53 <sub>349</sub>	35.398 <sub>234</sub>	44.61 <sub>247</sub>	60.572 <sub>244</sub>	41.35 <sub>138</sub>
10.6	54.146 <sub>219</sub>	23.02 <sub>367</sub>	35.632 <sub>190</sub>	47.08 <sub>241</sub>	60.816 <sub>203</sub>	39.97 <sub>117</sub>
20.6	54.365 <sub>141</sub>	26.69 <sub>375</sub>	35.822 <sub>144</sub>	49.49 <sub>228</sub>	61.019 <sub>156</sub>	38.80 <sub>92</sub>
30.5	54.506 <sub>61</sub>	30.44 <sub>371</sub>	35.966 <sub>94</sub>	51.77 <sub>210</sub>	61.175 <sub>106</sub>	37.88 <sub>67</sub>
Feb. 9.5	54.567 <sub>16</sub>	34.15 <sub>358</sub>	36.060 <sub>43</sub>	53.87 <sub>187</sub>	61.281 <sub>55</sub>	37.21 <sub>43</sub>
19.5	54.551 <sub>88</sub>	37.73 <sub>339</sub>	36.103 <sub>4</sub>	55.74 <sub>162</sub>	61.336 <sub>6</sub>	36.78 <sub>19</sub>
Mar. 1.5	54.463 <sub>155</sub>	41.12 <sub>310</sub>	36.099 <sub>46</sub>	57.36 <sub>136</sub>	61.342 <sub>38</sub>	36.59 <sub>1</sub>
11.4	54.308 <sub>211</sub>	44.22 <sub>275</sub>	36.053 <sub>84</sub>	58.72 <sub>108</sub>	61.304 <sub>76</sub>	36.60 <sub>18</sub>
21.4	54.097 <sub>258</sub>	46.97 <sub>236</sub>	35.969 <sub>113</sub>	59.80 <sub>79</sub>	61.228 <sub>106</sub>	36.78 <sub>32</sub>
31.4	53.839 <sub>293</sub>	49.33 <sub>193</sub>	35.856 <sub>134</sub>	60.59 <sub>52</sub>	61.122 <sub>129</sub>	37.10 <sub>43</sub>
Apr. 10.4	53.546 <sub>318</sub>	51.26 <sub>146</sub>	35.722 <sub>147</sub>	61.11 <sub>25</sub>	60.993 <sub>141</sub>	37.53 <sub>50</sub>
20.3	53.228 <sub>332</sub>	52.72 <sub>96</sub>	35.575 <sub>152</sub>	61.36 <sub>1</sub>	60.852 <sub>147</sub>	38.03 <sub>54</sub>
30.3	52.896 <sub>336</sub>	53.68 <sub>46</sub>	35.423 <sub>152</sub>	61.35 <sub>26</sub>	60.705 <sub>145</sub>	38.57 <sub>57</sub>
May 10.3	52.560 <sub>331</sub>	54.14 <sub>5</sub>	35.271 <sub>144</sub>	61.09 <sub>50</sub>	60.560 <sub>137</sub>	39.14 <sub>58</sub>
20.2	52.229 <sub>318</sub>	54.09 <sub>55</sub>	35.127 <sub>132</sub>	60.59 <sub>73</sub>	60.423 <sub>123</sub>	39.72 <sub>56</sub>
30.2	51.911 <sub>295</sub>	53.54 <sub>105</sub>	34.995 <sub>117</sub>	59.86 <sub>92</sub>	60.300 <sub>107</sub>	40.28 <sub>55</sub>
June 9.2	51.616 <sub>267</sub>	52.49 <sub>150</sub>	34.878 <sub>97</sub>	58.94 <sub>111</sub>	60.193 <sub>85</sub>	40.83 <sub>51</sub>
19.2	51.349 <sub>230</sub>	50.99 <sub>192</sub>	34.781 <sub>76</sub>	57.83 <sub>127</sub>	60.108 <sub>64</sub>	41.34 <sub>47</sub>
29.1	51.119 <sub>189</sub>	49.07 <sub>230</sub>	34.705 <sub>53</sub>	56.56 <sub>138</sub>	60.044 <sub>39</sub>	41.81 <sub>41</sub>
July 9.1	50.930 <sub>142</sub>	46.77 <sub>259</sub>	34.652 <sub>28</sub>	55.18 <sub>145</sub>	60.005 <sub>14</sub>	42.22 <sub>34</sub>
19.1	50.788 <sub>89</sub>	44.18 <sub>282</sub>	34.624 <sub>2</sub>	53.73 <sub>149</sub>	59.991 <sub>12</sub>	42.56 <sub>26</sub>
29.1	50.699 <sub>33</sub>	41.36 <sub>295</sub>	34.622 <sub>26</sub>	52.24 <sub>147</sub>	60.003 <sub>38</sub>	42.82 <sub>14</sub>
Aug. 8.0	50.666 <sub>27</sub>	38.41 <sub>300</sub>	34.648 <sub>55</sub>	50.77 <sub>139</sub>	60.041 <sub>66</sub>	42.96 <sub>2</sub>
18.0	50.693 <sub>90</sub>	35.41 <sub>293</sub>	34.703 <sub>85</sub>	49.38 <sub>125</sub>	60.107 <sub>94</sub>	42.98 <sub>14</sub>
28.0	50.783 <sub>154</sub>	32.48 <sub>277</sub>	34.788 <sub>115</sub>	48.13 <sub>105</sub>	60.201 <sub>123</sub>	42.84 <sub>32</sub>
Sept. 6.9	50.937 <sub>217</sub>	29.71 <sub>252</sub>	34.903 <sub>148</sub>	47.08 <sub>79</sub>	60.324 <sub>152</sub>	42.52 <sub>51</sub>
16.9	51.154 <sub>279</sub>	27.19 <sub>210</sub>	35.051 <sub>180</sub>	46.29 <sub>48</sub>	60.476 <sub>183</sub>	42.01 <sub>73</sub>
26.9	51.433 <sub>335</sub>	25.09 <sub>165</sub>	35.231 <sub>211</sub>	45.81 <sub>13</sub>	60.659 <sub>212</sub>	41.28 <sub>93</sub>
Oct. 6.9	51.768 <sub>386</sub>	23.44 <sub>111</sub>	35.442 <sub>241</sub>	45.68 <sub>26</sub>	60.871 <sub>242</sub>	40.35 <sub>116</sub>
16.8	52.154 <sub>427</sub>	22.33 <sub>51</sub>	35.683 <sub>269</sub>	45.94 <sub>65</sub>	61.113 <sub>268</sub>	39.19 <sub>135</sub>
26.8	52.581 <sub>457</sub>	21.82 <sub>13</sub>	35.952 <sub>291</sub>	46.59 <sub>106</sub>	61.381 <sub>291</sub>	37.84 <sub>153</sub>
Nov. 5.8	53.038 <sub>473</sub>	21.95 <sub>77</sub>	36.243 <sub>308</sub>	47.65 <sub>143</sub>	61.672 <sub>308</sub>	36.31 <sub>166</sub>
15.8	53.511 <sub>476</sub>	22.72 <sub>140</sub>	36.551 <sub>316</sub>	49.08 <sub>177</sub>	61.980 <sub>319</sub>	34.65 <sub>174</sub>
25.7	53.987 <sub>461</sub>	24.12 <sub>199</sub>	36.867 <sub>316</sub>	50.85 <sub>204</sub>	62.299 <sub>320</sub>	32.91 <sub>177</sub>
Dec. 5.7	54.448 <sub>431</sub>	26.11 <sub>252</sub>	37.183 <sub>306</sub>	52.89 <sub>226</sub>	62.619 <sub>312</sub>	31.14 <sub>173</sub>
15.7	54.879 <sub>388</sub>	28.63 <sub>297</sub>	37.489 <sub>285</sub>	55.15 <sub>240</sub>	62.931 <sub>294</sub>	29.41 <sub>163</sub>
25.6	55.267 <sub>330</sub>	31.60 <sub>331</sub>	37.774 <sub>256</sub>	57.55 <sub>245</sub>	63.225 <sub>266</sub>	27.78 <sub>148</sub>
35.6	55.597	34.91	38.030	60.00	63.491	26.30
Mean Place	51.111	23.09	34.014	39.64	59.394	52.39
Sec $\delta$ , Tan $\delta$	1.821	-1.522	1.031	-0.249	1.016	+0.181
L $\alpha$ , L $\delta$	-0.02	-0.3	0.00	-0.3	0.00	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.08	+0.6	-0.01	+0.6	+0.01	+0.6
AUTHORITY	A. N.		A. N.		A. N.	



APPARENT PLACES OF STARS, 1922. 339

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Leonis. Mag. 3.1		μ Leonis. Mag. 4.1		π Leonis. Mag. 4.9	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	h m 9 41	° ' 24 7	h m 9 48	° ' 26 22	h m 9 56	° ' 8 24
Jan. 0.6	26.753 <sup>267</sup>	48.25 <sup>70</sup>	20.952 <sup>276</sup>	15.36 <sup>63</sup>	6.673 <sup>260</sup>	58.49 <sup>155</sup>
10.6	27.020 <sup>223</sup>	47.55 <sup>40</sup>	21.228 <sup>233</sup>	14.73 <sup>31</sup>	6.933 <sup>216</sup>	56.94 <sup>132</sup>
20.6	27.243 <sup>173</sup>	47.15 <sup>9</sup>	21.461 <sup>184</sup>	14.42 <sup>1</sup>	7.149 <sup>172</sup>	55.62 <sup>107</sup>
30.5	27.416 <sup>121</sup>	47.06 <sup>18</sup>	21.645 <sup>129</sup>	14.43 <sup>30</sup>	7.321 <sup>124</sup>	54.55 <sup>84</sup>
Feb. 9.5	27.537 <sup>64</sup>	47.24 <sup>42</sup>	21.774 <sup>74</sup>	14.73 <sup>56</sup>	7.445 <sup>74</sup>	53.71 <sup>55</sup>
19.5	27.601 <sup>13</sup>	47.66 <sup>64</sup>	21.848 <sup>19</sup>	15.29 <sup>77</sup>	7.519 <sup>25</sup>	53.16 <sup>34</sup>
Mar. 1.5	27.614 <sup>33</sup>	48.30 <sup>81</sup>	21.867 <sup>31</sup>	16.06 <sup>93</sup>	7.544 <sup>18</sup>	52.82 <sup>10</sup>
11.4	27.581 <sup>78</sup>	49.11 <sup>90</sup>	21.836 <sup>72</sup>	16.99 <sup>103</sup>	7.526 <sup>58</sup>	52.72 <sup>10</sup>
21.4	27.503 <sup>113</sup>	50.01 <sup>94</sup>	21.764 <sup>110</sup>	18.02 <sup>106</sup>	7.468 <sup>91</sup>	52.82 <sup>25</sup>
31.4	27.390 <sup>138</sup>	50.95 <sup>94</sup>	21.654 <sup>136</sup>	19.08 <sup>104</sup>	7.377 <sup>114</sup>	53.07 <sup>38</sup>
Apr. 10.4	27.252 <sup>154</sup>	51.89 <sup>88</sup>	21.518 <sup>153</sup>	20.12 <sup>98</sup>	7.263 <sup>131</sup>	53.45 <sup>48</sup>
20.3	27.098 <sup>158</sup>	52.77 <sup>79</sup>	21.365 <sup>162</sup>	21.10 <sup>87</sup>	7.132 <sup>137</sup>	53.93 <sup>54</sup>
30.3	26.940 <sup>159</sup>	53.56 <sup>68</sup>	21.203 <sup>162</sup>	21.97 <sup>74</sup>	6.995 <sup>139</sup>	54.47 <sup>58</sup>
May 10.3	26.781 <sup>150</sup>	54.24 <sup>58</sup>	21.041 <sup>155</sup>	22.71 <sup>57</sup>	6.856 <sup>135</sup>	55.05 <sup>58</sup>
20.2	26.631 <sup>137</sup>	54.82 <sup>40</sup>	20.886 <sup>143</sup>	23.28 <sup>41</sup>	6.721 <sup>126</sup>	55.63 <sup>65</sup>
30.2	26.494 <sup>120</sup>	55.22 <sup>25</sup>	20.743 <sup>125</sup>	23.69 <sup>23</sup>	6.595 <sup>110</sup>	56.28 <sup>60</sup>
June 9.2	26.374 <sup>97</sup>	55.47 <sup>11</sup>	20.618 <sup>103</sup>	23.92 <sup>5</sup>	6.485 <sup>93</sup>	56.88 <sup>57</sup>
19.2	26.277 <sup>74</sup>	55.58 <sup>7</sup>	20.515 <sup>80</sup>	23.97 <sup>13</sup>	6.392 <sup>76</sup>	57.45 <sup>54</sup>
29.1	26.203 <sup>46</sup>	55.51 <sup>21</sup>	20.435 <sup>53</sup>	23.84 <sup>30</sup>	6.316 <sup>54</sup>	57.99 <sup>48</sup>
July 9.1	26.157 <sup>21</sup>	55.30 <sup>35</sup>	20.382 <sup>26</sup>	23.54 <sup>47</sup>	6.262 <sup>29</sup>	58.47 <sup>41</sup>
19.1	26.136 <sup>9</sup>	54.95 <sup>54</sup>	20.356 <sup>1</sup>	23.07 <sup>64</sup>	6.233 <sup>6</sup>	58.88 <sup>35</sup>
29.1	26.145 <sup>39</sup>	54.41 <sup>65</sup>	20.357 <sup>31</sup>	22.43 <sup>80</sup>	6.227 <sup>20</sup>	59.23 <sup>24</sup>
Aug. 8.0	26.184 <sup>69</sup>	53.76 <sup>83</sup>	20.388 <sup>61</sup>	21.63 <sup>95</sup>	6.247 <sup>47</sup>	59.47 <sup>7</sup>
18.0	26.253 <sup>99</sup>	52.93 <sup>98</sup>	20.449 <sup>92</sup>	20.68 <sup>111</sup>	6.294 <sup>76</sup>	59.54 <sup>7</sup>
28.0	26.352 <sup>128</sup>	51.95 <sup>111</sup>	20.541 <sup>123</sup>	19.57 <sup>127</sup>	6.370 <sup>101</sup>	59.47 <sup>23</sup>
Sept. 6.9	26.480 <sup>161</sup>	50.84 <sup>128</sup>	20.664 <sup>155</sup>	18.30 <sup>141</sup>	6.471 <sup>135</sup>	59.24 <sup>45</sup>
16.9	26.641 <sup>194</sup>	49.56 <sup>141</sup>	20.819 <sup>189</sup>	16.89 <sup>155</sup>	6.606 <sup>166</sup>	58.79 <sup>68</sup>
26.9	26.835 <sup>223</sup>	48.15 <sup>154</sup>	21.008 <sup>221</sup>	15.34 <sup>164</sup>	6.772 <sup>196</sup>	58.11 <sup>90</sup>
Oct. 6.9	27.058 <sup>257</sup>	46.61 <sup>162</sup>	21.229 <sup>254</sup>	13.70 <sup>176</sup>	6.968 <sup>229</sup>	57.21 <sup>114</sup>
16.8	27.315 <sup>285</sup>	44.99 <sup>171</sup>	21.483 <sup>283</sup>	11.94 <sup>180</sup>	7.197 <sup>259</sup>	56.07 <sup>135</sup>
26.8	27.600 <sup>306</sup>	43.28 <sup>173</sup>	21.766 <sup>310</sup>	10.14 <sup>182</sup>	7.456 <sup>281</sup>	54.72 <sup>155</sup>
Nov. 5.8	27.906 <sup>329</sup>	41.55 <sup>175</sup>	22.076 <sup>330</sup>	8.32 <sup>178</sup>	7.737 <sup>302</sup>	53.17 <sup>168</sup>
15.8	28.235 <sup>342</sup>	39.80 <sup>166</sup>	22.406 <sup>344</sup>	6.54 <sup>169</sup>	8.039 <sup>316</sup>	51.49 <sup>180</sup>
25.7	28.577 <sup>342</sup>	38.14 <sup>154</sup>	22.750 <sup>349</sup>	4.85 <sup>155</sup>	8.355 <sup>321</sup>	49.69 <sup>186</sup>
Dec. 5.7	28.919 <sup>334</sup>	36.60 <sup>134</sup>	23.099 <sup>343</sup>	3.30 <sup>134</sup>	8.676 <sup>315</sup>	47.83 <sup>184</sup>
15.7	29.253 <sup>318</sup>	35.26 <sup>115</sup>	23.442 <sup>328</sup>	1.96 <sup>109</sup>	8.991 <sup>302</sup>	45.99 <sup>176</sup>
25.6	29.571 <sup>288</sup>	34.11 <sup>85</sup>	23.770 <sup>296</sup>	0.87 <sup>80</sup>	9.293 <sup>278</sup>	44.23 <sup>164</sup>
35.6	29.859	33.26	24.066	0.07	9.571	42.59
Mean Place	25.644	62.49	19.885	30.09	5.579	68.66
Sec δ, Tan δ	1.096	+0.448	1.116	+0.496	1.011	+0.148
L α, L δ	+0.01	-0.3	+0.01	-0.3	0.00	-0.3
ω α, ω δ	+0.02	+0.6	+0.03	+0.5	+0.01	+0.5
AUTHORITY	A. E.		A. N.		A. E.	

# 340 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Leonis. Mag. 1.3		$\eta$ Velorum. Mag. 4.1		22 Sextantis. Mag. 5.4	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 10 4	<sup>°</sup> <sup>'</sup> 12 20	<sup>h</sup> <sup>m</sup> 10 11	<sup>°</sup> <sup>'</sup> 41 44	<sup>h</sup> <sup>m</sup> 10 13	<sup>°</sup> <sup>'</sup> 7 40
Jan. 0.6	14.240 <sup>267</sup>	45.29 <sup>141</sup>	29.272 <sup>295</sup>	2.36 <sup>312</sup>	46.426 <sup>262</sup>	49.16 <sup>223</sup>
10.6	14.507 <sup>226</sup>	43.88 <sup>113</sup>	29.567 <sup>244</sup>	5.48 <sup>328</sup>	46.688 <sup>223</sup>	51.39 <sup>214</sup>
20.6	14.733 <sup>182</sup>	42.75 <sup>89</sup>	29.811 <sup>191</sup>	8.76 <sup>334</sup>	46.911 <sup>182</sup>	53.53 <sup>200</sup>
30.6	14.915 <sup>134</sup>	41.86 <sup>59</sup>	30.002 <sup>130</sup>	12.10 <sup>333</sup>	47.093 <sup>133</sup>	55.53 <sup>180</sup>
Feb. 9.5	15.049 <sup>83</sup>	41.27 <sup>34</sup>	30.132 <sup>71</sup>	15.43 <sup>324</sup>	47.226 <sup>85</sup>	57.33 <sup>157</sup>
19.5	15.132 <sup>35</sup>	40.93 <sup>9</sup>	30.203 <sup>15</sup>	18.67 <sup>305</sup>	47.311 <sup>38</sup>	58.90 <sup>133</sup>
Mar. 1.5	15.167 <sup>11</sup>	40.84 <sup>13</sup>	30.218 <sup>39</sup>	21.72 <sup>282</sup>	47.349 <sup>7</sup>	60.23 <sup>107</sup>
11.5	15.156 <sup>52</sup>	40.97 <sup>31</sup>	30.179 <sup>85</sup>	24.54 <sup>252</sup>	47.342 <sup>45</sup>	61.30 <sup>81</sup>
21.4	15.104 <sup>84</sup>	41.28 <sup>46</sup>	30.094 <sup>126</sup>	27.06 <sup>218</sup>	47.297 <sup>77</sup>	62.11 <sup>58</sup>
31.4	15.020 <sup>110</sup>	41.74 <sup>52</sup>	29.968 <sup>157</sup>	29.24 <sup>182</sup>	47.220 <sup>103</sup>	62.69 <sup>33</sup>
Apr. 10.4	14.910 <sup>130</sup>	42.26 <sup>62</sup>	29.811 <sup>181</sup>	31.06 <sup>142</sup>	47.117 <sup>120</sup>	63.02 <sup>12</sup>
20.3	14.780 <sup>136</sup>	42.88 <sup>67</sup>	29.630 <sup>198</sup>	32.48 <sup>100</sup>	46.997 <sup>131</sup>	63.14 <sup>10</sup>
30.3	14.644 <sup>140</sup>	43.55 <sup>66</sup>	29.432 <sup>206</sup>	33.48 <sup>57</sup>	46.866 <sup>135</sup>	63.04 <sup>27</sup>
May 10.3	14.504 <sup>136</sup>	44.21 <sup>66</sup>	29.226 <sup>209</sup>	34.05 <sup>15</sup>	46.731 <sup>133</sup>	62.77 <sup>45</sup>
20.3	14.368 <sup>128</sup>	44.87 <sup>61</sup>	29.017 <sup>204</sup>	34.20 <sup>29</sup>	46.598 <sup>127</sup>	62.32 <sup>61</sup>
30.2	14.240 <sup>115</sup>	45.48 <sup>56</sup>	28.813 <sup>195</sup>	33.91 <sup>71</sup>	46.471 <sup>118</sup>	61.71 <sup>75</sup>
June 9.2	14.125 <sup>102</sup>	46.04 <sup>48</sup>	28.618 <sup>180</sup>	33.20 <sup>109</sup>	46.353 <sup>104</sup>	60.96 <sup>87</sup>
19.2	14.023 <sup>78</sup>	46.52 <sup>40</sup>	28.438 <sup>164</sup>	32.11 <sup>145</sup>	46.249 <sup>88</sup>	60.09 <sup>98</sup>
29.2	13.945 <sup>58</sup>	46.92 <sup>34</sup>	28.274 <sup>137</sup>	30.66 <sup>181</sup>	46.161 <sup>70</sup>	59.11 <sup>105</sup>
July 9.1	13.887 <sup>35</sup>	47.26 <sup>25</sup>	28.137 <sup>112</sup>	28.85 <sup>207</sup>	46.091 <sup>49</sup>	58.06 <sup>108</sup>
19.1	13.852 <sup>14</sup>	47.51 <sup>12</sup>	28.025 <sup>80</sup>	26.78 <sup>230</sup>	46.042 <sup>28</sup>	56.98 <sup>109</sup>
29.1	13.838 <sup>13</sup>	47.63 <sup>1</sup>	27.945 <sup>45</sup>	24.48 <sup>244</sup>	46.014 <sup>4</sup>	55.89 <sup>106</sup>
Aug. 8.0	13.851 <sup>40</sup>	47.62 <sup>15</sup>	27.900 <sup>8</sup>	22.04 <sup>249</sup>	46.010 <sup>23</sup>	54.83 <sup>98</sup>
18.0	13.891 <sup>69</sup>	47.47 <sup>30</sup>	27.892 <sup>35</sup>	19.55 <sup>248</sup>	46.033 <sup>51</sup>	53.85 <sup>85</sup>
28.0	13.960 <sup>97</sup>	47.17 <sup>51</sup>	27.927 <sup>80</sup>	17.07 <sup>236</sup>	46.084 <sup>80</sup>	53.00 <sup>68</sup>
Sept. 7.0	14.057 <sup>127</sup>	46.66 <sup>69</sup>	28.007 <sup>126</sup>	14.71 <sup>214</sup>	46.164 <sup>112</sup>	52.32 <sup>45</sup>
16.9	14.184 <sup>161</sup>	45.97 <sup>90</sup>	28.133 <sup>174</sup>	12.57 <sup>183</sup>	46.276 <sup>146</sup>	51.87 <sup>18</sup>
26.9	14.345 <sup>192</sup>	45.07 <sup>109</sup>	28.307 <sup>222</sup>	10.74 <sup>145</sup>	46.422 <sup>179</sup>	51.69 <sup>12</sup>
Oct. 6.9	14.537 <sup>224</sup>	43.98 <sup>132</sup>	28.529 <sup>265</sup>	9.29 <sup>99</sup>	46.601 <sup>213</sup>	51.81 <sup>45</sup>
16.9	14.761 <sup>254</sup>	42.66 <sup>149</sup>	28.794 <sup>305</sup>	8.30 <sup>49</sup>	46.814 <sup>245</sup>	52.26 <sup>79</sup>
26.8	15.015 <sup>283</sup>	41.17 <sup>163</sup>	29.099 <sup>342</sup>	7.81 <sup>8</sup>	47.059 <sup>273</sup>	53.05 <sup>114</sup>
Nov. 5.8	15.298 <sup>302</sup>	39.54 <sup>177</sup>	29.441 <sup>365</sup>	7.89 <sup>67</sup>	47.332 <sup>297</sup>	54.19 <sup>145</sup>
15.8	15.600 <sup>319</sup>	37.77 <sup>182</sup>	29.806 <sup>380</sup>	8.56 <sup>121</sup>	47.629 <sup>311</sup>	55.64 <sup>173</sup>
25.7	15.919 <sup>326</sup>	35.95 <sup>184</sup>	30.186 <sup>384</sup>	9.77 <sup>175</sup>	47.940 <sup>319</sup>	57.37 <sup>196</sup>
Dec. 5.7	16.245 <sup>321</sup>	34.11 <sup>179</sup>	30.570 <sup>374</sup>	11.52 <sup>223</sup>	48.259 <sup>316</sup>	59.33 <sup>213</sup>
15.7	16.566 <sup>309</sup>	32.32 <sup>167</sup>	30.944 <sup>352</sup>	13.75 <sup>263</sup>	48.575 <sup>303</sup>	61.46 <sup>222</sup>
25.7	16.875 <sup>284</sup>	30.65 <sup>151</sup>	31.296 <sup>320</sup>	16.38 <sup>294</sup>	48.878 <sup>281</sup>	63.68 <sup>224</sup>
35.6	17.159	29.14	31.616	19.32	49.159	65.92
Mean Place	13.209	56.31	27.454	6.29	45.273	44.06
Sec $\delta$ , Tan $\delta$	1.024	+0.219	1.340	-0.892	1.009	-0.135
L $\alpha$ , L $\delta$	0.00	-0.3	-0.01	-0.4	0.00	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.01	+0.5	-0.05	+0.5	-0.01	+0.5
AUTHORITY	A. E.		A. E.			

APPARENT PLACES OF STARS, 1922. 341

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	<i>γ</i> Carinæ. Mag. 3·4		<i>γ</i> Leonis (1st star). Mag. 2·6		<i>μ</i> Ursæ Majoris. Mag. 3·2	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 10	<sup>m</sup> 14	<sup>h</sup> 10	<sup>m</sup> 15	<sup>h</sup> 10	<sup>m</sup> 17
		60 56		20 13		41 52
Jan. 0·6	31·37	40 23·84	41·420	285 59·02	42·224	342 74·46
10·6	31·77	32 27·04	41·705	248 57·94	42·566	301 74·37
20·6	32·09	24 30·54	41·953	202 57·16	42·867	245 74·69
30·6	32·33	16 34·23	42·155	153 56·69	43·112	185 75·44
Feb. 9·5	32·49	7 37·99	42·308	100 56·53	43·297	120 76·54
19·5	32·56	1 41·73	42·408	49 56·66	43·417	57 77·97
Mar. 1·5	32·55	8 45·37	42·457	1 57·05	43·474	4 79·60
11·5	32·47	16 48·82	42·458	43 57·64	43·470	60 81·38
21·4	32·31	21 52·00	42·415	79 58·40	43·410	108 83·23
31·4	32·10	27 54·87	42·336	106 59·26	43·302	146 85·04
Apr. 10·4	31·83	31 57·35	42·230	127 60·18	43·156	173 86·76
20·3	31·52	33 59·41	42·103	139 61·10	42·983	191 88·30
30·3	31·19	35 61·01	41·964	144 61·98	42·792	198 89·62
May 10·3	30·84	37 62·12	41·820	142 62·79	42·594	199 90·67
20·3	30·47	36 62·73	41·678	135 63·50	42·395	190 91·42
30·2	30·11	35 62·82	41·543	123 64·10	42·205	176 91·83
June 9·2	29·76	34 62·39	41·420	106 64·56	42·029	156 91·92
19·2	29·42	31 61·46	41·314	89 64·88	41·873	131 91·70
29·2	29·11	28 60·06	41·225	68 65·06	41·742	103 91·14
July 9·1	28·83	23 58·22	41·157	45 65·09	41·639	74 90·29
19·1	28·60	19 55·99	41·112	22 64·95	41·565	41 89·16
29·1	28·41	13 53·45	41·090	4 64·66	41·524	8 87·77
Aug. 8·0	28·28	6 50·66	41·094	31 64·20	41·516	27 86·15
18·0	28·22	1 47·73	41·125	59 63·58	41·543	66 84·31
28·0	28·23	8 44·74	41·184	90 62·77	41·609	103 82·29
Sept. 7·0	28·31	15 41·81	41·274	122 61·79	41·712	142 80·12
16·9	28·46	24 39·03	41·396	155 60·64	41·854	185 77·83
26·9	28·70	30 36·53	41·551	189 59·30	42·039	225 75·47
Oct. 6·9	29·00	37 34·41	41·740	224 57·79	42·264	267 73·06
16·9	29·37	44 32·75	41·964	255 56·13	42·531	304 70·64
26·8	29·81	49 31·64	42·219	286 54·35	42·835	342 68·29
Nov. 5·8	30·30	51 31·13	42·505	310 52·47	43·177	370 66·06
15·8	30·81	54 31·27	42·815	329 50·56	43·547	391 64·00
25·7	31·35	54 32·05	43·144	337 48·67	43·938	404 62·19
Dec. 5·7	31·89	51 33·46	43·481	338 46·85	44·342	405 60·66
15·7	32·40	48 35·45	43·819	326 45·16	44·747	393 59·47
25·7	32·88	47 37·98	44·145	304 43·68	45·140	368 58·70
35·6	33·35	297 40·95	44·449	124 42·44	45·508	368 58·34
Mean Place	28·53	31·79	40·493	71·96	41·368	92·50
Sec δ, Tan δ	2·059	—1·800	1·066	+0·369	1·343	+0·897
L α, L δ	—0·02	—0·4	0·00	—0·4	+0·01	—0·4
ω α, ω δ	—0·11	+0·4	+0·02	+0·4	+0·05	+0·4

AUTHORITY

A. E.

# 342 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\mu$ Hydræ. Mag. 4.1		$\alpha$ Antliæ. Mag. 4.4		$\rho$ Leonis. Mag. 3.9		
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.	
	<sup>h</sup> 10 <sup>m</sup> 22	<sup>h</sup> 16 <sup>m</sup> 26	<sup>h</sup> 10 <sup>m</sup> 23	<sup>h</sup> 30 <sup>m</sup> 40	<sup>h</sup> 10 <sup>m</sup> 28	<sup>h</sup> 9 <sup>m</sup> 42	
Jan.	0.7 10.6 20.6 30.6	20.265 <sup>268</sup> 20.533 <sup>230</sup> 20.763 <sup>188</sup> 20.951 <sup>143</sup>	17.47 <sup>251</sup> 19.98 <sup>249</sup> 22.47 <sup>242</sup> 24.89 <sup>227</sup>	36.296 <sup>283</sup> 36.579 <sup>242</sup> 36.821 <sup>192</sup> 37.013 <sup>144</sup>	12.19 <sup>287</sup> 15.06 <sup>297</sup> 18.03 <sup>298</sup> 21.01 <sup>294</sup>	43.268 <sup>279</sup> 43.547 <sup>244</sup> 43.791 <sup>202</sup> 43.993 <sup>157</sup>	20.64 <sup>159</sup> 19.05 <sup>136</sup> 17.69 <sup>110</sup> 16.59 <sup>82</sup>
Feb.	9.6 19.5	21.094 <sup>90</sup> 21.184 <sup>44</sup>	27.16 <sup>207</sup> 29.23 <sup>184</sup>	37.157 <sup>91</sup> 37.248 <sup>39</sup>	23.95 <sup>278</sup> 26.73 <sup>259</sup>	44.150 <sup>107</sup> 44.257 <sup>59</sup>	15.77 <sup>54</sup> 15.23 <sup>27</sup>
Mar.	1.5 11.5 21.4 31.4	21.228 <sup>3</sup> 21.225 <sup>38</sup> 21.187 <sup>76</sup> 21.111 <sup>101</sup>	31.07 <sup>162</sup> 32.69 <sup>131</sup> 34.00 <sup>105</sup> 35.05 <sup>79</sup>	37.287 <sup>8</sup> 37.279 <sup>53</sup> 37.226 <sup>90</sup> 37.136 <sup>114</sup>	29.32 <sup>237</sup> 31.69 <sup>206</sup> 33.75 <sup>176</sup> 35.51 <sup>144</sup>	44.316 <sup>13</sup> 44.329 <sup>28</sup> 44.301 <sup>62</sup> 44.239 <sup>91</sup>	14.96 <sup>4</sup> 14.92 <sup>18</sup> 15.10 <sup>35</sup> 15.45 <sup>48</sup>
Apr.	10.4 20.4 30.3 10.3	21.010 <sup>117</sup> 20.893 <sup>134</sup> 20.759 <sup>138</sup> 20.621 <sup>140</sup>	35.84 <sup>48</sup> 36.32 <sup>22</sup> 36.54 <sup>2</sup> 36.52 <sup>29</sup>	37.022 <sup>140</sup> 36.882 <sup>155</sup> 36.727 <sup>159</sup> 36.568 <sup>166</sup>	36.95 <sup>108</sup> 38.03 <sup>73</sup> 38.76 <sup>37</sup> 39.13 <sup>1</sup>	44.148 <sup>110</sup> 44.038 <sup>123</sup> 43.915 <sup>130</sup> 43.785 <sup>130</sup>	15.93 <sup>58</sup> 16.51 <sup>64</sup> 17.15 <sup>67</sup> 17.82 <sup>67</sup>
May	20.3 30.2 June 9.2 19.2	20.481 <sup>136</sup> 20.345 <sup>126</sup> 20.219 <sup>116</sup> 20.103 <sup>100</sup>	36.23 <sup>52</sup> 35.71 <sup>76</sup> 34.95 <sup>91</sup> 34.04 <sup>111</sup>	36.402 <sup>162</sup> 36.240 <sup>156</sup> 36.084 <sup>145</sup> 35.939 <sup>128</sup>	39.14 <sup>35</sup> 38.79 <sup>70</sup> 38.09 <sup>97</sup> 37.12 <sup>130</sup>	43.655 <sup>125</sup> 43.530 <sup>117</sup> 43.413 <sup>104</sup> 43.309 <sup>89</sup>	18.49 <sup>66</sup> 19.15 <sup>63</sup> 19.78 <sup>58</sup> 20.36 <sup>52</sup>
July	29.2 9.1 19.1 29.1	20.003 <sup>86</sup> 19.917 <sup>64</sup> 19.853 <sup>42</sup> 19.811 <sup>7</sup>	32.93 <sup>108</sup> 31.66 <sup>137</sup> 30.29 <sup>144</sup> 28.85 <sup>145</sup>	35.811 <sup>118</sup> 35.701 <sup>91</sup> 35.610 <sup>63</sup> 35.547 <sup>38</sup>	35.82 <sup>155</sup> 34.27 <sup>175</sup> 32.52 <sup>193</sup> 30.59 <sup>204</sup>	43.220 <sup>72</sup> 43.148 <sup>53</sup> 43.095 <sup>33</sup> 43.062 <sup>9</sup>	20.88 <sup>44</sup> 21.32 <sup>35</sup> 21.67 <sup>25</sup> 21.92 <sup>13</sup>
Aug.	8.1 18.0 28.0 7.0	19.793 <sup>18</sup> 19.800 <sup>41</sup> 19.841 <sup>72</sup> 19.913 <sup>103</sup>	27.40 <sup>140</sup> 26.00 <sup>131</sup> 24.69 <sup>118</sup> 23.51 <sup>92</sup>	35.509 <sup>2</sup> 35.507 <sup>27</sup> 35.534 <sup>68</sup> 35.602 <sup>105</sup>	28.55 <sup>205</sup> 26.50 <sup>201</sup> 24.49 <sup>187</sup> 22.62 <sup>168</sup>	43.053 <sup>15</sup> 43.068 <sup>42</sup> 43.110 <sup>72</sup> 43.182 <sup>102</sup>	22.05 <sup>2</sup> 22.03 <sup>19</sup> 21.84 <sup>37</sup> 21.47 <sup>57</sup>
Sept.	16.9 26.9 Oct. 6.9 16.9	20.016 <sup>140</sup> 20.156 <sup>176</sup> 20.332 <sup>213</sup> 20.545 <sup>246</sup>	22.59 <sup>65</sup> 21.94 <sup>33</sup> 21.61 <sup>4</sup> 21.65 <sup>45</sup>	35.707 <sup>149</sup> 35.856 <sup>186</sup> 36.042 <sup>231</sup> 36.273 <sup>266</sup>	20.94 <sup>137</sup> 19.57 <sup>105</sup> 18.52 <sup>60</sup> 17.92 <sup>15</sup>	43.284 <sup>135</sup> 43.419 <sup>169</sup> 43.588 <sup>204</sup> 43.792 <sup>237</sup>	20.90 <sup>80</sup> 20.10 <sup>102</sup> 19.08 <sup>125</sup> 17.83 <sup>145</sup>
Nov.	26.8 5.8 15.8 25.8	20.791 <sup>274</sup> 21.065 <sup>299</sup> 21.364 <sup>319</sup> 21.683 <sup>325</sup>	22.10 <sup>83</sup> 22.93 <sup>123</sup> 24.16 <sup>159</sup> 25.75 <sup>193</sup>	36.539 <sup>299</sup> 36.838 <sup>325</sup> 37.163 <sup>343</sup> 37.506 <sup>349</sup>	17.77 <sup>35</sup> 18.12 <sup>85</sup> 18.97 <sup>134</sup> 20.31 <sup>179</sup>	44.029 <sup>267</sup> 44.296 <sup>293</sup> 44.589 <sup>313</sup> 44.902 <sup>323</sup>	16.38 <sup>165</sup> 14.73 <sup>180</sup> 12.93 <sup>190</sup> 11.03 <sup>195</sup>
Dec.	5.7 15.7 25.7 35.6	22.008 <sup>327</sup> 22.335 <sup>310</sup> 22.645 <sup>285</sup> 22.930	27.68 <sup>217</sup> 29.85 <sup>237</sup> 32.22 <sup>245</sup> 34.67	37.855 <sup>343</sup> 38.198 <sup>329</sup> 38.527 <sup>305</sup> 38.832	22.10 <sup>217</sup> 24.27 <sup>250</sup> 26.77 <sup>275</sup> 29.52	45.225 <sup>325</sup> 45.550 <sup>316</sup> 45.866 <sup>296</sup> 46.162	9.08 <sup>192</sup> 7.16 <sup>184</sup> 5.32 <sup>169</sup> 3.63
Mean Place Sec $\delta$ , Tan $\delta$	19.040 1.043	15.30 -0.295	34.829 1.163	14.13 -0.593	42.346 1.015	30.35 +0.171	
L $\alpha$ , L $\delta$ $\omega$ $\alpha$ , $\omega$ $\delta$	0.00 -0.02	-0.4 +0.4	-0.01 -0.04	-0.4 +0.4	0.00 +0.01	-0.4 +0.4	
AUTHORITY	A. E.		A. E.		A. N.		

# APPARENT PLACES OF STARS, 1922. 343

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		34 Sextantis. Mag. 6.6		$\theta$ Argûs. Mag. 3.0		$\eta$ Argûs. Mag. > 1-7.4	
		R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
		<sup>h</sup> <sup>m</sup> 10 38	<sup>°</sup> <sup>'</sup> 3 59	<sup>h</sup> <sup>m</sup> 10 40	<sup>°</sup> <sup>'</sup> 63 58	<sup>h</sup> <sup>m</sup> 10 42	<sup>°</sup> <sup>'</sup> 59 16
Jan.	0.7	36.807 <sup>281</sup>	20.50 <sup>183</sup>	13.10 <sup>46</sup>	59.61 <sup>297</sup>	4.346 <sup>421</sup>	17.33 <sup>298</sup>
	10.6	37.088 <sup>247</sup>	18.67 <sup>166</sup>	13.56 <sup>40</sup>	62.58 <sup>333</sup>	4.767 <sup>359</sup>	20.31 <sup>331</sup>
	20.6	37.335 <sup>208</sup>	17.01 <sup>142</sup>	13.96 <sup>31</sup>	65.91 <sup>357</sup>	5.126 <sup>289</sup>	23.62 <sup>354</sup>
	30.6	37.543 <sup>162</sup>	15.59 <sup>117</sup>	14.27 <sup>23</sup>	69.48 <sup>372</sup>	5.415 <sup>210</sup>	27.16 <sup>366</sup>
Feb.	9.6	37.705 <sup>114</sup>	14.42 <sup>92</sup>	14.50 <sup>14</sup>	73.20 <sup>378</sup>	5.625 <sup>132</sup>	30.82 <sup>370</sup>
	19.5	37.819 <sup>67</sup>	13.50 <sup>64</sup>	14.64 <sup>4</sup>	76.98 <sup>373</sup>	5.757 <sup>54</sup>	34.52 <sup>364</sup>
Mar.	1.5	37.886 <sup>22</sup>	12.86 <sup>39</sup>	14.68 <sup>4</sup>	80.71 <sup>361</sup>	5.811 <sup>21</sup>	38.16 <sup>349</sup>
	11.5	37.908 <sup>18</sup>	12.47 <sup>15</sup>	14.64 <sup>11</sup>	84.32 <sup>338</sup>	5.790 <sup>88</sup>	41.65 <sup>327</sup>
	21.4	37.890 <sup>53</sup>	12.32 <sup>4</sup>	14.53 <sup>19</sup>	87.70 <sup>314</sup>	5.702 <sup>150</sup>	44.92 <sup>300</sup>
	31.4	37.837 <sup>81</sup>	12.36 <sup>22</sup>	14.34 <sup>25</sup>	90.84 <sup>278</sup>	5.552 <sup>201</sup>	47.92 <sup>266</sup>
Apr.	10.4	37.756 <sup>102</sup>	12.58 <sup>36</sup>	14.09 <sup>29</sup>	93.62 <sup>239</sup>	5.351 <sup>244</sup>	50.58 <sup>226</sup>
	20.4	37.654 <sup>115</sup>	12.94 <sup>47</sup>	13.80 <sup>34</sup>	96.01 <sup>196</sup>	5.107 <sup>279</sup>	52.84 <sup>184</sup>
	30.3	37.539 <sup>124</sup>	13.41 <sup>55</sup>	13.46 <sup>37</sup>	97.97 <sup>148</sup>	4.828 <sup>303</sup>	54.68 <sup>138</sup>
May	10.3	37.415 <sup>125</sup>	13.96 <sup>61</sup>	13.09 <sup>39</sup>	99.45 <sup>99</sup>	4.525 <sup>321</sup>	56.06 <sup>89</sup>
	20.3	37.290 <sup>123</sup>	14.57 <sup>65</sup>	12.70 <sup>40</sup>	100.44 <sup>49</sup>	4.204 <sup>328</sup>	56.95 <sup>39</sup>
	30.2	37.167 <sup>116</sup>	15.22 <sup>67</sup>	12.30 <sup>40</sup>	100.93 <sup>5</sup>	3.876 <sup>328</sup>	57.34 <sup>10</sup>
June	9.2	37.051 <sup>105</sup>	15.89 <sup>68</sup>	11.90 <sup>38</sup>	100.88 <sup>58</sup>	3.548 <sup>320</sup>	57.24 <sup>62</sup>
	19.2	36.946 <sup>93</sup>	16.57 <sup>67</sup>	11.52 <sup>38</sup>	100.30 <sup>106</sup>	3.228 <sup>304</sup>	56.62 <sup>109</sup>
	29.2	36.853 <sup>78</sup>	17.24 <sup>64</sup>	11.14 <sup>34</sup>	99.24 <sup>152</sup>	2.924 <sup>279</sup>	55.53 <sup>155</sup>
July	9.1	36.775 <sup>60</sup>	17.88 <sup>58</sup>	10.80 <sup>30</sup>	97.72 <sup>197</sup>	2.645 <sup>246</sup>	53.98 <sup>195</sup>
	19.1	36.715 <sup>41</sup>	18.46 <sup>52</sup>	10.50 <sup>25</sup>	95.75 <sup>234</sup>	2.399 <sup>206</sup>	52.03 <sup>231</sup>
	29.1	36.674 <sup>20</sup>	18.98 <sup>42</sup>	10.25 <sup>19</sup>	93.41 <sup>263</sup>	2.193 <sup>157</sup>	49.72 <sup>258</sup>
Aug.	8.1	36.654 <sup>5</sup>	19.40 <sup>30</sup>	10.06 <sup>13</sup>	90.78 <sup>286</sup>	2.036 <sup>101</sup>	47.14 <sup>279</sup>
	18.0	36.659 <sup>30</sup>	19.70 <sup>13</sup>	9.93 <sup>5</sup>	87.92 <sup>297</sup>	1.935 <sup>38</sup>	44.35 <sup>288</sup>
	28.0	36.689 <sup>60</sup>	19.83 <sup>3</sup>	9.88 <sup>2</sup>	84.95 <sup>300</sup>	1.897 <sup>31</sup>	41.47 <sup>289</sup>
Sept.	7.0	36.749 <sup>90</sup>	19.80 <sup>25</sup>	9.90 <sup>12</sup>	81.95 <sup>289</sup>	1.928 <sup>102</sup>	38.58 <sup>279</sup>
	16.9	36.839 <sup>124</sup>	19.55 <sup>48</sup>	10.02 <sup>20</sup>	79.06 <sup>270</sup>	2.030 <sup>177</sup>	35.79 <sup>257</sup>
	26.9	36.963 <sup>158</sup>	19.07 <sup>73</sup>	10.22 <sup>29</sup>	76.36 <sup>237</sup>	2.207 <sup>251</sup>	33.22 <sup>226</sup>
Oct.	6.9	37.121 <sup>194</sup>	18.34 <sup>99</sup>	10.51 <sup>37</sup>	73.99 <sup>195</sup>	2.458 <sup>322</sup>	30.96 <sup>183</sup>
	16.9	37.315 <sup>227</sup>	17.35 <sup>125</sup>	10.88 <sup>44</sup>	72.04 <sup>147</sup>	2.780 <sup>385</sup>	29.13 <sup>133</sup>
	26.8	37.542 <sup>260</sup>	16.10 <sup>149</sup>	11.32 <sup>50</sup>	70.57 <sup>87</sup>	3.165 <sup>442</sup>	27.80 <sup>76</sup>
Nov.	5.8	37.802 <sup>286</sup>	14.61 <sup>169</sup>	11.82 <sup>55</sup>	69.70 <sup>27</sup>	3.607 <sup>483</sup>	27.04 <sup>15</sup>
	15.8	38.088 <sup>307</sup>	12.92 <sup>187</sup>	12.37 <sup>58</sup>	69.43 <sup>39</sup>	4.090 <sup>512</sup>	26.89 <sup>48</sup>
	25.8	38.395 <sup>319</sup>	11.05 <sup>197</sup>	12.95 <sup>59</sup>	69.82 <sup>102</sup>	4.602 <sup>522</sup>	27.37 <sup>111</sup>
Dec.	5.7	38.714 <sup>323</sup>	9.08 <sup>202</sup>	13.54 <sup>59</sup>	70.84 <sup>165</sup>	5.124 <sup>516</sup>	28.48 <sup>171</sup>
	15.7	39.037 <sup>314</sup>	7.06 <sup>199</sup>	14.13 <sup>55</sup>	72.49 <sup>222</sup>	5.640 <sup>491</sup>	30.19 <sup>225</sup>
	25.7	39.351 <sup>297</sup>	5.07 <sup>191</sup>	14.68 <sup>50</sup>	74.71 <sup>269</sup>	6.131 <sup>450</sup>	32.44 <sup>272</sup>
	35.6	39.648	3.16	15.18	77.40	6.581	35.16
Mean Place		35.892	28.19	10.16	70.03	1.843	27.09
Sec $\delta$ , Tan $\delta$		1.002	+0.070	2.280	-2.049	1.957	-1.682
L $\alpha$ , L $\delta$		0.00	-0.4	-0.02	-0.4	-0.01	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$		+0.01	+0.3	-0.13	+0.3	-0.11	+0.3
AUTHORITY		A. E.					

## 344 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\mu$ Argûs. Mag. 2·8		$\iota$ Leonis. Mag. 5·3		$\nu$ Hydræ. Mag. 3·3	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	h m 10 43	° ' 49 0	h m 10 45	° ' 10 57	h m 10 45	° ' 15 47
Jan.	0·7 26·543 <sup>355</sup>	21·24 <sup>297</sup>	10·387 <sup>289</sup>	19·97 <sup>161</sup>	47·618 <sup>285</sup>	7·87 <sup>245</sup>
	10·6 26·898 <sup>306</sup>	24·21 <sup>323</sup>	10·676 <sup>260</sup>	18·36 <sup>134</sup>	47·903 <sup>251</sup>	10·32 <sup>244</sup>
	20·6 27·204 <sup>248</sup>	27·44 <sup>341</sup>	10·936 <sup>215</sup>	17·02 <sup>108</sup>	48·154 <sup>210</sup>	12·76 <sup>237</sup>
	30·6 27·452 <sup>187</sup>	30·85 <sup>347</sup>	11·151 <sup>173</sup>	15·94 <sup>78</sup>	48·364 <sup>164</sup>	15·13 <sup>223</sup>
Feb.	9·6 27·639 <sup>123</sup>	34·32 <sup>345</sup>	11·324 <sup>124</sup>	15·16 <sup>50</sup>	48·528 <sup>117</sup>	17·36 <sup>205</sup>
	19·5 27·762 <sup>59</sup>	37·77 <sup>336</sup>	11·448 <sup>77</sup>	14·66 <sup>21</sup>	48·645 <sup>70</sup>	19·41 <sup>182</sup>
Mar.	1·5 27·821 <sup>2</sup>	41·13 <sup>317</sup>	11·525 <sup>30</sup>	14·45 <sup>1</sup>	48·715 <sup>25</sup>	21·23 <sup>159</sup>
	11·5 27·823 <sup>55</sup>	44·30 <sup>296</sup>	11·555 <sup>11</sup>	14·46 <sup>25</sup>	48·740 <sup>16</sup>	22·82 <sup>132</sup>
	21·4 27·768 <sup>102</sup>	47·26 <sup>265</sup>	11·544 <sup>48</sup>	14·71 <sup>44</sup>	48·724 <sup>51</sup>	24·14 <sup>105</sup>
	31·4 27·666 <sup>144</sup>	49·91 <sup>231</sup>	11·496 <sup>76</sup>	15·15 <sup>57</sup>	48·673 <sup>79</sup>	25·19 <sup>79</sup>
Apr.	10·4 27·522 <sup>176</sup>	52·22 <sup>192</sup>	11·420 <sup>100</sup>	15·72 <sup>67</sup>	48·594 <sup>100</sup>	25·98 <sup>53</sup>
	20·4 27·346 <sup>200</sup>	54·14 <sup>153</sup>	11·320 <sup>115</sup>	16·39 <sup>71</sup>	48·494 <sup>117</sup>	26·51 <sup>27</sup>
	30·3 27·146 <sup>221</sup>	55·67 <sup>108</sup>	11·205 <sup>121</sup>	17·10 <sup>73</sup>	48·377 <sup>126</sup>	26·78 <sup>2</sup>
May	10·3 26·925 <sup>231</sup>	56·75 <sup>63</sup>	11·084 <sup>127</sup>	17·83 <sup>73</sup>	48·251 <sup>130</sup>	26·80 <sup>21</sup>
	20·3 26·694 <sup>235</sup>	57·38 <sup>19</sup>	10·957 <sup>125</sup>	18·56 <sup>71</sup>	48·121 <sup>130</sup>	26·59 <sup>43</sup>
	30·3 26·459 <sup>234</sup>	57·57 <sup>28</sup>	10·832 <sup>120</sup>	19·27 <sup>65</sup>	47·991 <sup>125</sup>	26·16 <sup>65</sup>
June	9·2 26·225 <sup>224</sup>	57·29 <sup>73</sup>	10·712 <sup>109</sup>	19·92 <sup>59</sup>	47·866 <sup>118</sup>	25·51 <sup>83</sup>
	19·2 26·001 <sup>213</sup>	56·56 <sup>114</sup>	10·603 <sup>96</sup>	20·51 <sup>50</sup>	47·748 <sup>107</sup>	24·68 <sup>101</sup>
	29·2 25·788 <sup>192</sup>	55·42 <sup>155</sup>	10·507 <sup>85</sup>	21·01 <sup>41</sup>	47·641 <sup>93</sup>	23·67 <sup>115</sup>
July	9·1 25·596 <sup>171</sup>	53·87 <sup>190</sup>	10·422 <sup>64</sup>	21·42 <sup>32</sup>	47·548 <sup>78</sup>	22·52 <sup>125</sup>
	19·1 25·425 <sup>138</sup>	51·97 <sup>220</sup>	10·358 <sup>44</sup>	21·74 <sup>19</sup>	47·470 <sup>58</sup>	21·27 <sup>133</sup>
	29·1 25·287 <sup>105</sup>	49·77 <sup>243</sup>	10·314 <sup>25</sup>	21·93 <sup>4</sup>	47·412 <sup>37</sup>	19·94 <sup>136</sup>
Aug.	8·1 25·182 <sup>60</sup>	47·34 <sup>256</sup>	10·289 <sup>2</sup>	21·97 <sup>11</sup>	47·375 <sup>12</sup>	18·58 <sup>133</sup>
	18·0 25·122 <sup>15</sup>	44·78 <sup>263</sup>	10·291 <sup>25</sup>	21·86 <sup>26</sup>	47·363 <sup>16</sup>	17·25 <sup>125</sup>
	28·0 25·107 <sup>36</sup>	42·15 <sup>261</sup>	10·316 <sup>56</sup>	21·60 <sup>47</sup>	47·379 <sup>47</sup>	16·00 <sup>110</sup>
Sept.	7·0 25·143 <sup>90</sup>	39·54 <sup>245</sup>	10·372 <sup>86</sup>	21·13 <sup>68</sup>	47·426 <sup>81</sup>	14·90 <sup>91</sup>
	17·0 25·233 <sup>148</sup>	37·09 <sup>224</sup>	10·458 <sup>121</sup>	20·45 <sup>90</sup>	47·507 <sup>117</sup>	13·99 <sup>65</sup>
	26·9 25·381 <sup>207</sup>	34·85 <sup>189</sup>	10·579 <sup>155</sup>	19·55 <sup>110</sup>	47·624 <sup>155</sup>	13·34 <sup>35</sup>
Oct.	6·9 25·588 <sup>260</sup>	32·96 <sup>148</sup>	10·734 <sup>193</sup>	18·45 <sup>134</sup>	47·779 <sup>193</sup>	12·99 <sup>1</sup>
	16·9 25·848 <sup>312</sup>	31·48 <sup>99</sup>	10·927 <sup>224</sup>	17·11 <sup>154</sup>	47·972 <sup>229</sup>	13·00 <sup>38</sup>
	26·8 26·160 <sup>358</sup>	30·49 <sup>45</sup>	11·151 <sup>259</sup>	15·57 <sup>173</sup>	48·201 <sup>264</sup>	13·38 <sup>77</sup>
Nov.	5·8 26·518 <sup>394</sup>	30·04 <sup>13</sup>	11·410 <sup>287</sup>	13·84 <sup>186</sup>	48·465 <sup>291</sup>	14·15 <sup>115</sup>
	15·8 26·912 <sup>419</sup>	30·17 <sup>75</sup>	11·697 <sup>309</sup>	11·98 <sup>196</sup>	48·756 <sup>313</sup>	15·30 <sup>151</sup>
	25·8 27·331 <sup>429</sup>	30·92 <sup>131</sup>	12·006 <sup>322</sup>	10·02 <sup>198</sup>	49·069 <sup>326</sup>	16·81 <sup>184</sup>
Dec.	5·7 27·760 <sup>424</sup>	32·23 <sup>186</sup>	12·328 <sup>327</sup>	8·04 <sup>197</sup>	49·395 <sup>328</sup>	18·65 <sup>209</sup>
	15·7 28·184 <sup>410</sup>	34·09 <sup>234</sup>	12·655 <sup>321</sup>	6·07 <sup>187</sup>	49·723 <sup>320</sup>	20·74 <sup>228</sup>
	25·7 28·594 <sup>378</sup>	36·43 <sup>275</sup>	12·976 <sup>305</sup>	4·20 <sup>172</sup>	50·043 <sup>300</sup>	23·02 <sup>240</sup>
	35·7 28·972	39·18	13·281	2·48	50·343	25·42
Mean Place	24·631	29·01	9·567	29·59	46·518	6·64
Sec $\delta$ , Tan $\delta$	1·524	-1·150	1·019	+0·194	1·039	-0·283
L $\alpha$ , L $\delta$	-0·01	-0·4	0·00	-0·4	0·00	-0·4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0·07	+0·3	+0·01	+0·3	-0·02	+0·3
AUTHORITY	A. E.		A. E.		A. N.	

# APPARENT PLACES OF STARS, 1922. 345

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\iota$ Antliæ. Mag. 4·7		$\delta$ Leonis. Mag. 5·1		$\beta$ Ursæ Majoris. Mag. 2·4		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.	
	<sup>h</sup> 10 53	<sup>m</sup> 36 43	<sup>h</sup> 10 56	<sup>m</sup> 4 1	<sup>h</sup> 10 57	<sup>m</sup> 56 47	
Jan.	0·7 10·6 20·6 30·6	6·233 <sub>320</sub> 6·553 <sub>280</sub> 6·833 <sub>235</sub> 7·068 <sub>182</sub>	0·22 <sub>281</sub> 3·03 <sub>300</sub> 6·03 <sub>308</sub> 9·11 <sub>310</sub>	32·795 <sub>290</sub> 33·085 <sub>260</sub> 33·345 <sub>222</sub> 33·567 <sub>179</sub>	64·49 <sub>187</sub> 62·62 <sub>169</sub> 60·93 <sub>146</sub> 59·47 <sub>121</sub>	9·225 <sub>471</sub> 9·696 <sub>426</sub> 10·122 <sub>365</sub> 10·487 <sub>294</sub>	42·39 <sub>12</sub> 42·51 <sub>66</sub> 43·17 <sub>118</sub> 44·35 <sub>161</sub>
Feb.	9·6 19·5	7·250 <sub>129</sub> 7·379 <sub>75</sub>	12·21 <sub>302</sub> 15·23 <sub>290</sub>	33·746 <sub>132</sub> 33·878 <sub>85</sub>	58·26 <sub>93</sub> 57·33 <sub>67</sub>	10·781 <sub>212</sub> 10·993 <sub>132</sub>	45·96 <sub>202</sub> 47·98 <sub>229</sub>
Mar.	1·5 11·5 21·5	7·454 <sub>25</sub> 7·479 <sub>22</sub> 7·457 <sub>63</sub>	18·13 <sub>269</sub> 20·82 <sub>244</sub> 23·26 <sub>217</sub>	33·963 <sub>41</sub> 34·004 <sub>1</sub> 34·003 <sub>36</sub>	56·66 <sub>39</sub> 56·27 <sub>16</sub> 56·11 <sub>5</sub>	11·125 <sub>49</sub> 11·174 <sub>30</sub> 11·144 <sub>100</sub>	50·27 <sub>247</sub> 52·74 <sub>255</sub> 55·29 <sub>250</sub>
Apr.	31·4 10·4 20·4	7·394 <sub>97</sub> 7·297 <sub>124</sub> 7·173 <sub>145</sub>	25·43 <sub>184</sub> 27·27 <sub>151</sub> 28·78 <sub>113</sub>	33·967 <sub>65</sub> 33·902 <sub>88</sub> 33·814 <sub>104</sub>	56·16 <sub>23</sub> 56·39 <sub>37</sub> 56·76 <sub>49</sub>	11·044 <sub>161</sub> 10·883 <sub>211</sub> 10·672 <sub>248</sub>	57·79 <sub>238</sub> 60·17 <sub>215</sub> 62·32 <sub>185</sub>
May	30·3 10·3 20·3 30·3	7·028 <sub>160</sub> 6·868 <sub>168</sub> 6·700 <sub>172</sub> 6·528 <sub>171</sub>	29·91 <sub>78</sub> 30·69 <sub>39</sub> 31·08 <sub>1</sub> 31·09 <sub>37</sub>	33·710 <sub>116</sub> 33·594 <sub>119</sub> 33·475 <sub>119</sub> 33·356 <sub>116</sub>	57·25 <sub>57</sub> 57·82 <sub>63</sub> 58·45 <sub>66</sub> 59·11 <sub>69</sub>	10·424 <sub>274</sub> 10·150 <sub>285</sub> 9·865 <sub>291</sub> 9·574 <sub>281</sub>	64·17 <sub>150</sub> 65·67 <sub>109</sub> 66·76 <sub>64</sub> 67·40 <sub>20</sub>
June	9·2 19·2 29·2	6·357 <sub>166</sub> 6·191 <sub>155</sub> 6·036 <sub>142</sub>	30·72 <sub>74</sub> 29·98 <sub>109</sub> 28·89 <sub>139</sub>	33·240 <sub>109</sub> 33·131 <sub>99</sub> 33·032 <sub>86</sub>	59·80 <sub>68</sub> 60·48 <sub>66</sub> 61·14 <sub>63</sub>	9·293 <sub>268</sub> 9·025 <sub>243</sub> 8·782 <sub>214</sub>	67·60 <sub>24</sub> 67·36 <sub>70</sub> 66·66 <sub>111</sub>
July	9·2 19·1 29·1	5·894 <sub>124</sub> 5·770 <sub>102</sub> 5·668 <sub>75</sub>	27·50 <sub>168</sub> 25·82 <sub>190</sub> 23·92 <sub>207</sub>	32·946 <sub>71</sub> 32·875 <sub>54</sub> 32·821 <sub>34</sub>	61·77 <sub>57</sub> 62·34 <sub>50</sub> 62·84 <sub>40</sub>	8·568 <sub>180</sub> 8·388 <sub>140</sub> 8·248 <sub>97</sub>	65·55 <sub>151</sub> 64·04 <sub>188</sub> 62·16 <sub>218</sub>
Aug.	8·1 18·0 28·0	5·593 <sub>44</sub> 5·549 <sub>9</sub> 5·540 <sub>31</sub>	21·85 <sub>216</sub> 19·69 <sub>219</sub> 17·50 <sub>213</sub>	32·787 <sub>12</sub> 32·775 <sub>13</sub> 32·788 <sub>42</sub>	63·24 <sub>27</sub> 63·51 <sub>12</sub> 63·63 <sub>5</sub>	8·151 <sub>51</sub> 8·100 <sub>3</sub> 8·097 <sub>52</sub>	59·98 <sub>245</sub> 57·53 <sub>271</sub> 54·82 <sub>289</sub>
Sept.	7·0 17·0 26·9	5·571 <sub>74</sub> 5·645 <sub>120</sub> 5·765 <sub>167</sub>	15·37 <sub>197</sub> 13·40 <sub>174</sub> 11·66 <sub>141</sub>	32·830 <sub>72</sub> 32·902 <sub>107</sub> 33·009 <sub>142</sub>	63·58 <sub>27</sub> 63·31 <sub>50</sub> 62·81 <sub>75</sub>	8·149 <sub>106</sub> 8·255 <sub>162</sub> 8·417 <sub>222</sub>	51·93 <sub>302</sub> 48·91 <sub>310</sub> 45·81 <sub>311</sub>
Oct.	6·9 16·9 26·9	5·932 <sub>214</sub> 6·146 <sub>258</sub> 6·404 <sub>299</sub>	10·25 <sub>102</sub> 9·23 <sub>57</sub> 8·66 <sub>7</sub>	33·151 <sub>179</sub> 33·330 <sub>215</sub> 33·545 <sub>248</sub>	62·06 <sub>101</sub> 61·05 <sub>126</sub> 59·79 <sub>150</sub>	8·639 <sub>280</sub> 8·919 <sub>338</sub> 9·257 <sub>392</sub>	42·70 <sub>308</sub> 39·62 <sub>294</sub> 36·68 <sub>277</sub>
Nov.	5·8 15·8 25·8	6·703 <sub>332</sub> 7·035 <sub>356</sub> 7·391 <sub>369</sub>	8·59 <sub>44</sub> 9·03 <sub>98</sub> 10·01 <sub>147</sub>	33·793 <sub>278</sub> 34·071 <sub>303</sub> 34·374 <sub>318</sub>	58·29 <sub>171</sub> 56·58 <sub>189</sub> 54·69 <sub>199</sub>	9·649 <sub>438</sub> 10·087 <sub>479</sub> 10·566 <sub>504</sub>	33·91 <sub>248</sub> 31·43 <sub>215</sub> 29·28 <sub>174</sub>
Dec.	5·7 15·7 25·7 35·7	7·760 <sub>371</sub> 8·131 <sub>361</sub> 8·492 <sub>338</sub> 8·830	11·48 <sub>193</sub> 13·41 <sub>232</sub> 15·73 <sub>265</sub> 18·38	34·692 <sub>323</sub> 35·015 <sub>320</sub> 35·335 <sub>305</sub> 35·640	52·70 <sub>205</sub> 50·65 <sub>203</sub> 48·62 <sub>195</sub> 46·67	11·070 <sub>517</sub> 11·587 <sub>514</sub> 12·101 <sub>495</sub> 12·596	27·54 <sub>127</sub> 26·27 <sub>75</sub> 25·52 <sub>22</sub> 25·30
Mean Place	4·779	5·54	31·976	71·58	8·784	63·02	
Sec $\delta$ , Tan $\delta$	1·248	-0·746	1·002	+0·071	1·826	+1·528	
L $\alpha$ , L $\delta$	-0·01	-0·4	0·00	-0·4	+0·01	-0·4	
$\omega$ $\alpha$ , $\omega$ $\delta$	-0·05	+0·3	0·00	+0·3	+0·10	+0·3	

AUTHORITY

A. N.

A. E.

# 346 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Ursæ Majoris. Mag. 2.0		$\chi$ Leonis. Mag. 4.7		$\psi$ Ursæ Majoris. Mag. 3.2		
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	<sup>h</sup> 10 <sup>m</sup> 58	<sup>°</sup> 62 <sup>'</sup> 9	<sup>h</sup> 11 <sup>m</sup> 0	<sup>°</sup> 7 <sup>'</sup> 45	<sup>h</sup> 11 <sup>m</sup> 5	<sup>°</sup> 44 <sup>'</sup> 54	
Jan.	0.7 10.7 20.6 30.6	56.14 54 56.68 49 57.17 41 57.58 34	59.29 30 59.59 83 60.42 139 61.81 184	60.442 295 60.737 265 61.002 228 61.230 183	21.14 175 19.39 155 17.84 129 16.55 101	17.597 387 17.984 350 18.334 305 18.639 250	60.93 40 60.53 9 60.62 55 61.17 100
Feb.	9.6 19.5	57.92 24 58.16 15	63.65 223 65.88 247	61.413 137 61.550 91	15.54 71 14.83 43	18.889 186 19.075 120	62.17 142 63.59 170
Mar.	1.5 11.5 21.5 31.4	58.31 5 58.36 3 58.33 13 58.20 19	68.35 268 71.03 272 73.75 264 76.39 252	61.641 43 61.684 5 61.689 32 61.657 62	14.40 19 14.21 7 14.28 25 14.53 42	19.195 59 19.254 1 19.253 57 19.196 105	65.29 195 67.24 208 69.32 213 71.45 208
Apr.	10.4 20.4 30.4	58.01 26 57.75 30 57.45 33	78.91 224 81.15 191 83.06 153	61.595 88 61.507 104 61.403 115	14.95 55 15.50 63 16.13 69	19.091 142 18.949 169 18.780 189	73.53 195 75.48 177 77.25 148
May	10.3 20.3 30.3	57.12 35 56.77 36 56.41 35	84.59 106 85.65 62 86.27 12	61.288 118 61.170 121 61.049 119	16.82 71 17.53 71 18.24 70	18.591 199 18.392 205 18.187 199	78.73 119 79.92 82 80.74 47
June	9.2 19.2 29.2	56.06 33 55.73 30 55.43 27	86.39 35 86.04 85 85.19 127	60.930 110 60.820 102 60.718 89	18.94 65 19.59 59 20.18 52	17.988 188 17.800 173 17.627 156	81.21 11 81.32 28 81.04 66
July	9.2 19.1 29.1	55.16 23 54.93 18 54.75 13	83.92 168 82.24 205 80.19 242	60.629 75 60.554 57 60.497 37	20.70 44 21.14 33 21.47 22	17.471 129 17.342 104 17.238 71	80.38 99 79.39 134 78.05 161
Aug.	8.1 18.1 28.0	54.62 8 54.54 1 54.53 5	77.77 267 75.10 293 72.17 308	60.460 17 60.443 9 60.452 38	21.69 6 21.75 10 21.65 28	17.167 41 17.126 3 17.123 35	76.44 192 74.52 214 72.38 237
Sept.	7.0 17.0 26.9	54.58 11 54.69 17 54.86 25	69.09 321 65.88 328 62.60 327	60.490 69 60.559 102 60.661 140	21.37 50 20.87 73 20.14 97	17.158 82 17.240 124 17.364 169	70.01 255 67.46 269 64.77 277
Oct.	6.9 16.9 26.9	55.11 32 55.43 38 55.81 44	59.33 319 56.14 303 53.11 282	60.801 174 60.975 212 61.187 245	19.17 118 17.99 144 16.55 164	17.533 220 17.753 265 18.018 311	62.00 278 59.22 278 56.44 270
Nov.	5.8 15.8 25.8	56.25 50 56.75 54 57.29 57	50.29 250 47.79 211 45.68 169	61.432 278 61.710 300 62.010 318	14.91 181 13.10 196 11.14 203	18.329 351 18.680 385 19.065 406	53.74 252 51.22 229 48.93 196
Dec.	5.8 15.7 25.7 35.7	57.86 60 58.46 58 59.04 56 59.60	43.99 116 42.83 62 42.21 8 42.13	62.328 326 62.654 322 62.976 309 63.285	9.11 202 7.09 198 5.11 185 3.26	19.471 419 19.890 419 20.309 406 20.715	46.97 162 45.35 118 44.17 70 43.47
Mean Place	55.76	80.67	59.684	29.27	17.155	79.27	
Sec $\delta$ , Tan $\delta$	2.142	+1.894	1.009	+0.136	1.412	+0.997	
L $\alpha$ , L $\delta$	+0.01	-0.4	0.00	-0.4	+0.01	-0.4	
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.12	+0.3	+0.01	+0.3	+0.06	+0.2	
AUTHORITY	A. E.		A. E.		A. E.		



# APPARENT PLACES OF STARS, 1922. 347

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Crateris. Mag. 4.5		$\delta$ Leonis. Mag. 2.6		$\theta$ Leonis. Mag. 3.4	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> II 7	<sup>m</sup> 22 23	<sup>h</sup> II 9	<sup>m</sup> 20 56	<sup>h</sup> II 10	<sup>m</sup> 15 50
Jan. 0.7	50.250 <sup>304</sup>	57.61 <sup>252</sup>	58.390 <sup>315</sup>	52.51 <sup>132</sup>	9.543 <sup>308</sup>	71.65 <sup>152</sup>
10.7	50.554 <sup>273</sup>	60.13 <sup>261</sup>	58.705 <sup>285</sup>	51.19 <sup>103</sup>	9.851 <sup>277</sup>	70.13 <sup>123</sup>
20.6	50.827 <sup>233</sup>	62.74 <sup>261</sup>	58.990 <sup>247</sup>	50.16 <sup>64</sup>	10.128 <sup>242</sup>	68.90 <sup>93</sup>
30.6	51.060 <sup>187</sup>	65.35 <sup>251</sup>	59.237 <sup>205</sup>	49.52 <sup>32</sup>	10.370 <sup>199</sup>	67.97 <sup>57</sup>
Feb. 9.6	51.247 <sup>140</sup>	67.86 <sup>241</sup>	59.442 <sup>155</sup>	49.20 <sup>5</sup>	10.569 <sup>151</sup>	67.40 <sup>26</sup>
19.5	51.387 <sup>93</sup>	70.27 <sup>221</sup>	59.597 <sup>107</sup>	49.25 <sup>35</sup>	10.720 <sup>104</sup>	67.14 <sup>5</sup>
Mar. 1.5	51.480 <sup>46</sup>	72.48 <sup>196</sup>	59.704 <sup>60</sup>	49.60 <sup>62</sup>	10.824 <sup>56</sup>	67.19 <sup>32</sup>
11.5	51.526 <sup>6</sup>	74.44 <sup>175</sup>	59.764 <sup>12</sup>	50.22 <sup>86</sup>	10.880 <sup>14</sup>	67.51 <sup>54</sup>
21.5	51.532 <sup>31</sup>	76.19 <sup>147</sup>	59.776 <sup>27</sup>	51.08 <sup>97</sup>	10.894 <sup>25</sup>	68.05 <sup>73</sup>
31.4	51.501 <sup>62</sup>	77.66 <sup>120</sup>	59.749 <sup>60</sup>	52.05 <sup>111</sup>	10.869 <sup>57</sup>	68.78 <sup>84</sup>
Apr. 10.4	51.439 <sup>88</sup>	78.86 <sup>90</sup>	59.689 <sup>87</sup>	53.16 <sup>114</sup>	10.812 <sup>84</sup>	69.62 <sup>93</sup>
20.4	51.351 <sup>107</sup>	79.76 <sup>62</sup>	59.602 <sup>110</sup>	54.30 <sup>113</sup>	10.728 <sup>104</sup>	70.55 <sup>96</sup>
30.4	51.244 <sup>120</sup>	80.38 <sup>35</sup>	59.492 <sup>120</sup>	55.43 <sup>107</sup>	10.624 <sup>114</sup>	71.51 <sup>94</sup>
May 10.3	51.124 <sup>129</sup>	80.73 <sup>6</sup>	59.372 <sup>128</sup>	56.50 <sup>101</sup>	10.510 <sup>123</sup>	72.45 <sup>90</sup>
20.3	50.995 <sup>134</sup>	80.79 <sup>21</sup>	59.244 <sup>131</sup>	57.51 <sup>84</sup>	10.387 <sup>125</sup>	73.35 <sup>80</sup>
30.3	50.861 <sup>132</sup>	80.58 <sup>47</sup>	59.113 <sup>128</sup>	58.35 <sup>69</sup>	10.262 <sup>122</sup>	74.15 <sup>72</sup>
June 9.2	50.729 <sup>129</sup>	80.11 <sup>72</sup>	58.985 <sup>124</sup>	59.04 <sup>52</sup>	10.140 <sup>118</sup>	74.87 <sup>58</sup>
19.2	50.600 <sup>123</sup>	79.39 <sup>94</sup>	58.861 <sup>113</sup>	59.56 <sup>34</sup>	10.022 <sup>107</sup>	75.45 <sup>45</sup>
29.2	50.477 <sup>112</sup>	78.45 <sup>114</sup>	58.748 <sup>101</sup>	59.90 <sup>17</sup>	9.915 <sup>98</sup>	75.90 <sup>31</sup>
July 9.2	50.365 <sup>99</sup>	77.31 <sup>131</sup>	58.647 <sup>87</sup>	60.07 <sup>5</sup>	9.817 <sup>80</sup>	76.21 <sup>15</sup>
19.1	50.266 <sup>83</sup>	76.00 <sup>145</sup>	58.560 <sup>67</sup>	60.02 <sup>25</sup>	9.737 <sup>66</sup>	76.36 <sup>2</sup>
29.1	50.183 <sup>62</sup>	74.55 <sup>154</sup>	58.493 <sup>47</sup>	59.77 <sup>43</sup>	9.671 <sup>45</sup>	76.34 <sup>18</sup>
Aug. 8.1	50.121 <sup>39</sup>	73.01 <sup>155</sup>	58.446 <sup>25</sup>	59.34 <sup>67</sup>	9.626 <sup>24</sup>	76.16 <sup>38</sup>
18.1	50.082 <sup>8</sup>	71.46 <sup>151</sup>	58.421 <sup>2</sup>	58.67 <sup>89</sup>	9.602 <sup>2</sup>	75.78 <sup>59</sup>
28.0	50.074 <sup>21</sup>	69.95 <sup>144</sup>	58.423 <sup>31</sup>	57.78 <sup>105</sup>	9.604 <sup>29</sup>	75.19 <sup>78</sup>
Sept. 7.0	50.095 <sup>58</sup>	68.51 <sup>127</sup>	58.454 <sup>64</sup>	56.73 <sup>130</sup>	9.633 <sup>62</sup>	74.41 <sup>98</sup>
17.0	50.153 <sup>97</sup>	67.24 <sup>101</sup>	58.518 <sup>99</sup>	55.43 <sup>151</sup>	9.695 <sup>96</sup>	73.43 <sup>121</sup>
26.9	50.250 <sup>138</sup>	66.23 <sup>73</sup>	58.617 <sup>136</sup>	53.92 <sup>170</sup>	9.791 <sup>133</sup>	72.22 <sup>142</sup>
Oct. 6.9	50.388 <sup>180</sup>	65.50 <sup>39</sup>	58.753 <sup>173</sup>	52.22 <sup>185</sup>	9.924 <sup>170</sup>	70.80 <sup>161</sup>
16.9	50.568 <sup>220</sup>	65.11 <sup>1</sup>	58.926 <sup>215</sup>	50.37 <sup>200</sup>	10.094 <sup>209</sup>	69.19 <sup>180</sup>
26.9	50.788 <sup>256</sup>	65.12 <sup>42</sup>	59.141 <sup>249</sup>	48.37 <sup>212</sup>	10.303 <sup>245</sup>	67.39 <sup>195</sup>
Nov. 5.8	51.044 <sup>291</sup>	65.54 <sup>85</sup>	59.390 <sup>285</sup>	46.25 <sup>217</sup>	10.548 <sup>277</sup>	65.44 <sup>206</sup>
15.8	51.335 <sup>316</sup>	66.39 <sup>126</sup>	59.675 <sup>311</sup>	44.08 <sup>219</sup>	10.825 <sup>304</sup>	63.38 <sup>211</sup>
25.8	51.651 <sup>333</sup>	67.65 <sup>163</sup>	59.986 <sup>330</sup>	41.89 <sup>210</sup>	11.129 <sup>324</sup>	61.27 <sup>208</sup>
Dec. 5.8	51.984 <sup>339</sup>	69.28 <sup>198</sup>	60.316 <sup>340</sup>	39.79 <sup>197</sup>	11.453 <sup>332</sup>	59.19 <sup>201</sup>
15.7	52.323 <sup>333</sup>	71.26 <sup>226</sup>	60.656 <sup>341</sup>	37.82 <sup>180</sup>	11.785 <sup>332</sup>	57.18 <sup>188</sup>
25.7	52.656 <sup>319</sup>	73.52 <sup>244</sup>	60.997 <sup>327</sup>	36.02 <sup>150</sup>	12.117 <sup>319</sup>	55.30 <sup>167</sup>
35.7	52.975	75.96	61.324	34.52	12.436	53.63
Mean Place	49.166	59.56	57.797	64.47	8.910	82.04
Sec $\delta$ , Tan $\delta$	1.082	-0.412	1.071	+0.383	1.040	+0.284
L $\alpha$ , L $\delta$	0.00	-0.4	0.00	-0.4	0.00	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.03	+0.2	+0.02	+0.2	+0.02	+0.2
AUTHORITY	A. E.		A. E.		A. E.	

# 348 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	δ Crateris. Mag. 3·8		τ Leonis. Mag. 5·2		λ Draconis. Mag. 4·1	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	h m II 15	° ′ 14 21	h m II 23	° ′ 3 16	h m II 26	° ′ 69 45
Jan.	0·7 27·287 <sup>302</sup> 10·7 27·589 <sup>271</sup> 20·6 27·860 <sup>234</sup> 30·6 28·094 <sup>191</sup>	22·83 <sup>234</sup> 25·17 <sup>234</sup> 27·51 <sup>228</sup> 29·79 <sup>215</sup>	56·257 <sup>303</sup> 56·560 <sup>276</sup> 56·836 <sup>242</sup> 57·078 <sup>203</sup>	63·77 <sup>194</sup> 61·83 <sup>176</sup> 60·07 <sup>155</sup> 58·52 <sup>130</sup>	47·39 <sup>72</sup> 48·11 <sup>66</sup> 48·77 <sup>59</sup> 49·36 <sup>49</sup>	20·33 <sup>19</sup> 20·52 <sup>82</sup> 21·34 <sup>138</sup> 22·72 <sup>190</sup>
Feb.	9·6 28·285 <sup>147</sup> 19·5 28·432 <sup>102</sup>	31·94 <sup>196</sup> 33·90 <sup>178</sup>	57·281 <sup>157</sup> 57·438 <sup>113</sup>	57·22 <sup>101</sup> 56·21 <sup>74</sup>	49·85 <sup>37</sup> 50·22 <sup>26</sup>	24·62 <sup>233</sup> 26·95 <sup>265</sup>
Mar.	1·5 28·534 <sup>55</sup> 11·5 28·589 <sup>18</sup> 21·5 28·607 <sup>18</sup> 31·4 28·589 <sup>52</sup>	35·68 <sup>152</sup> 37·20 <sup>127</sup> 38·47 <sup>103</sup> 39·50 <sup>77</sup>	57·551 <sup>69</sup> 57·620 <sup>27</sup> 57·647 <sup>9</sup> 57·638 <sup>41</sup>	55·47 <sup>46</sup> 55·01 <sup>21</sup> 54·80 <sup>1</sup> 54·81 <sup>20</sup>	50·48 <sup>13</sup> 50·61 <sup>1</sup> 50·62 <sup>11</sup> 50·51 <sup>21</sup>	29·60 <sup>287</sup> 32·47 <sup>295</sup> 35·42 <sup>294</sup> 38·36 <sup>281</sup>
Apr.	10·4 28·537 <sup>77</sup> 20·4 28·460 <sup>92</sup> 30·4 28·368 <sup>110</sup>	40·27 <sup>51</sup> 40·78 <sup>30</sup> 41·08 <sup>4</sup>	57·597 <sup>66</sup> 57·531 <sup>86</sup> 57·445 <sup>99</sup>	55·01 <sup>37</sup> 55·38 <sup>48</sup> 55·86 <sup>58</sup>	50·30 <sup>31</sup> 49·99 <sup>39</sup> 49·60 <sup>44</sup>	41·17 <sup>254</sup> 43·71 <sup>222</sup> 45·93 <sup>184</sup>
May	10·3 28·258 <sup>115</sup> 20·3 28·143 <sup>122</sup> 30·3 28·021 <sup>121</sup>	41·12 <sup>14</sup> 40·98 <sup>36</sup> 40·62 <sup>55</sup>	57·346 <sup>108</sup> 57·238 <sup>113</sup> 57·125 <sup>114</sup>	56·44 <sup>64</sup> 57·08 <sup>69</sup> 57·77 <sup>69</sup>	49·16 <sup>48</sup> 48·68 <sup>50</sup> 48·18 <sup>51</sup>	47·77 <sup>133</sup> 49·10 <sup>86</sup> 49·96 <sup>32</sup>
June	9·2 27·900 <sup>121</sup> 19·2 27·779 <sup>112</sup> 29·2 27·667 <sup>104</sup>	40·07 <sup>73</sup> 39·34 <sup>89</sup> 38·45 <sup>100</sup>	57·011 <sup>111</sup> 56·900 <sup>105</sup> 56·795 <sup>97</sup>	58·46 <sup>71</sup> 59·17 <sup>68</sup> 59·85 <sup>64</sup>	47·67 <sup>50</sup> 47·17 <sup>47</sup> 46·70 <sup>44</sup>	50·28 <sup>19</sup> 50·09 <sup>74</sup> 49·35 <sup>120</sup>
July	9·2 27·563 <sup>91</sup> 19·1 27·472 <sup>80</sup> 29·1 27·392 <sup>57</sup>	37·45 <sup>111</sup> 36·34 <sup>115</sup> 35·19 <sup>120</sup>	56·698 <sup>86</sup> 56·612 <sup>73</sup> 56·539 <sup>55</sup>	60·49 <sup>59</sup> 61·08 <sup>51</sup> 61·59 <sup>42</sup>	46·26 <sup>39</sup> 45·87 <sup>33</sup> 45·54 <sup>27</sup>	48·15 <sup>168</sup> 46·47 <sup>210</sup> 44·37 <sup>249</sup>
Aug.	8·1 27·335 <sup>36</sup> 18·1 27·299 <sup>13</sup> 28·0 27·286 <sup>17</sup>	33·99 <sup>119</sup> 32·80 <sup>110</sup> 31·70 <sup>100</sup>	56·484 <sup>36</sup> 56·448 <sup>13</sup> 56·435 <sup>14</sup>	62·01 <sup>29</sup> 62·30 <sup>14</sup> 62·44 <sup>4</sup>	45·27 <sup>20</sup> 45·07 <sup>12</sup> 44·95 <sup>4</sup>	41·88 <sup>283</sup> 39·05 <sup>309</sup> 35·96 <sup>331</sup>
Sept.	7·0 27·303 <sup>52</sup> 17·0 27·355 <sup>88</sup> 26·9 27·443 <sup>127</sup>	30·70 <sup>80</sup> 29·90 <sup>58</sup> 29·32 <sup>30</sup>	56·449 <sup>45</sup> 56·494 <sup>79</sup> 56·573 <sup>116</sup>	62·40 <sup>23</sup> 62·17 <sup>47</sup> 61·70 <sup>72</sup>	44·91 <sup>5</sup> 44·96 <sup>14</sup> 45·10 <sup>23</sup>	32·65 <sup>346</sup> 29·19 <sup>353</sup> 25·66 <sup>354</sup>
Oct.	6·9 27·570 <sup>165</sup> 16·9 27·735 <sup>207</sup> 26·9 27·942 <sup>243</sup>	29·02 <sup>3</sup> 29·05 <sup>35</sup> 29·40 <sup>74</sup>	56·689 <sup>154</sup> 56·843 <sup>193</sup> 57·036 <sup>230</sup>	60·98 <sup>97</sup> 60·01 <sup>124</sup> 58·77 <sup>148</sup>	45·33 <sup>33</sup> 45·66 <sup>42</sup> 46·08 <sup>51</sup>	22·12 <sup>349</sup> 18·63 <sup>332</sup> 15·31 <sup>311</sup>
Nov.	5·8 28·185 <sup>274</sup> 15·8 28·459 <sup>303</sup> 25·8 28·762 <sup>320</sup>	30·14 <sup>109</sup> 31·23 <sup>144</sup> 32·67 <sup>174</sup>	57·266 <sup>264</sup> 57·530 <sup>291</sup> 57·821 <sup>312</sup>	57·29 <sup>171</sup> 55·58 <sup>189</sup> 53·69 <sup>201</sup>	46·59 <sup>59</sup> 47·18 <sup>66</sup> 47·84 <sup>71</sup>	12·20 <sup>276</sup> 9·44 <sup>240</sup> 7·04 <sup>191</sup>
Dec.	5·8 29·082 <sup>331</sup> 15·7 29·413 <sup>325</sup> 25·7 29·738 <sup>314</sup> 35·7 30·052 <sup>314</sup>	34·41 <sup>202</sup> 36·43 <sup>216</sup> 38·59 <sup>233</sup> 40·92 <sup>233</sup>	58·133 <sup>324</sup> 58·457 <sup>324</sup> 58·781 <sup>314</sup> 59·095 <sup>314</sup>	51·68 <sup>208</sup> 49·60 <sup>208</sup> 47·52 <sup>202</sup> 45·50 <sup>202</sup>	48·55 <sup>74</sup> 49·29 <sup>76</sup> 50·05 <sup>74</sup> 50·79 <sup>74</sup>	5·13 <sup>139</sup> 3·74 <sup>80</sup> 2·94 <sup>17</sup> 2·77 <sup>17</sup>
Mean Place	26·364	22·54	55·584	69·61	47·59	42·28
Sec δ, Tan δ	1·032	—0·256	1·002	+0·057	2·891	+2·712
L α, L δ	0·00	—0·4	0·00	—0·4	+0·01	—0·4
ω α, ω δ	—0·02	+0·2	0·00	+0·2	+0·18	+0·1
AUTHORITY	A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 349

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ξ Hydræ. Mag. 3·7		λ Centauri. Mag. 3·3		ν Leonis. Mag. 4·5	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 11 <sup>m</sup> 29	<sup>°</sup> 31 <sup>'</sup> 25	<sup>h</sup> 11 <sup>m</sup> 32	<sup>°</sup> 62 <sup>'</sup> 35	<sup>h</sup> 11 <sup>m</sup> 32	<sup>°</sup> 0 <sup>'</sup> 23
Jan. 0·7	10·861 <sup>333</sup>	27·73 <sup>251</sup>	12·70 <sup>52</sup>	3·71 <sup>246</sup>	57·959 <sup>308</sup>	38·91 <sup>202</sup>
10·7	11·194 <sup>299</sup>	30·24 <sup>272</sup>	13·22 <sup>48</sup>	6·17 <sup>286</sup>	58·267 <sup>279</sup>	40·93 <sup>191</sup>
20·6	11·493 <sup>263</sup>	32·96 <sup>280</sup>	13·70 <sup>40</sup>	9·03 <sup>321</sup>	58·546 <sup>246</sup>	42·84 <sup>173</sup>
30·6	11·756 <sup>215</sup>	35·76 <sup>281</sup>	14·10 <sup>33</sup>	12·24 <sup>344</sup>	58·792 <sup>206</sup>	44·57 <sup>147</sup>
Feb. 9·6	11·971 <sup>170</sup>	38·57 <sup>275</sup>	14·43 <sup>26</sup>	15·68 <sup>359</sup>	58·998 <sup>168</sup>	46·04 <sup>124</sup>
19·6	12·141 <sup>118</sup>	41·32 <sup>264</sup>	14·69 <sup>17</sup>	19·27 <sup>364</sup>	59·166 <sup>122</sup>	47·28 <sup>96</sup>
Mar. 1·5	12·259 <sup>72</sup>	43·96 <sup>248</sup>	14·86 <sup>9</sup>	22·91 <sup>361</sup>	59·288 <sup>76</sup>	48·24 <sup>69</sup>
11·5	12·331 <sup>29</sup>	46·44 <sup>223</sup>	14·95 <sup>1</sup>	26·52 <sup>349</sup>	59·364 <sup>35</sup>	48·93 <sup>44</sup>
21·5	12·360 <sup>13</sup>	48·67 <sup>199</sup>	14·96 <sup>5</sup>	30·01 <sup>331</sup>	59·399 <sup>1</sup>	49·37 <sup>21</sup>
31·4	12·347 <sup>46</sup>	50·66 <sup>173</sup>	14·91 <sup>12</sup>	33·32 <sup>307</sup>	59·400 <sup>31</sup>	49·58 <sup>0</sup>
Apr. 10·4	12·301 <sup>79</sup>	52·39 <sup>141</sup>	14·79 <sup>18</sup>	36·39 <sup>276</sup>	59·369 <sup>57</sup>	49·58 <sup>18</sup>
20·4	12·222 <sup>101</sup>	53·80 <sup>113</sup>	14·61 <sup>23</sup>	39·15 <sup>239</sup>	59·312 <sup>79</sup>	49·40 <sup>34</sup>
30·4	12·121 <sup>119</sup>	54·93 <sup>78</sup>	14·38 <sup>28</sup>	41·54 <sup>196</sup>	59·233 <sup>94</sup>	49·06 <sup>44</sup>
May 10·3	12·002 <sup>134</sup>	55·71 <sup>46</sup>	14·10 <sup>30</sup>	43·50 <sup>154</sup>	59·139 <sup>102</sup>	48·62 <sup>54</sup>
20·3	11·868 <sup>144</sup>	56·17 <sup>14</sup>	13·80 <sup>33</sup>	45·04 <sup>106</sup>	59·037 <sup>110</sup>	48·08 <sup>64</sup>
30·3	11·724 <sup>147</sup>	56·31 <sup>17</sup>	13·47 <sup>35</sup>	46·10 <sup>56</sup>	58·927 <sup>112</sup>	47·44 <sup>67</sup>
June 9·3	11·577 <sup>149</sup>	56·14 <sup>52</sup>	13·12 <sup>36</sup>	46·66 <sup>6</sup>	58·815 <sup>112</sup>	46·77 <sup>70</sup>
19·2	11·428 <sup>145</sup>	55·62 <sup>83</sup>	12·76 <sup>36</sup>	46·72 <sup>44</sup>	58·703 <sup>107</sup>	46·07 <sup>72</sup>
29·2	11·283 <sup>140</sup>	54·79 <sup>106</sup>	12·40 <sup>35</sup>	46·28 <sup>94</sup>	58·596 <sup>101</sup>	45·35 <sup>73</sup>
July 9·2	11·143 <sup>129</sup>	53·73 <sup>135</sup>	12·05 <sup>32</sup>	45·34 <sup>140</sup>	58·495 <sup>93</sup>	44·62 <sup>69</sup>
19·1	11·014 <sup>113</sup>	52·38 <sup>155</sup>	11·73 <sup>30</sup>	43·94 <sup>183</sup>	58·402 <sup>78</sup>	43·93 <sup>64</sup>
29·1	10·901 <sup>97</sup>	50·83 <sup>172</sup>	11·43 <sup>26</sup>	42·11 <sup>221</sup>	58·324 <sup>63</sup>	43·29 <sup>58</sup>
Aug. 8·1	10·804 <sup>68</sup>	49·11 <sup>182</sup>	11·17 <sup>20</sup>	39·90 <sup>249</sup>	58·261 <sup>45</sup>	42·71 <sup>47</sup>
18·1	10·736 <sup>42</sup>	47·29 <sup>186</sup>	10·97 <sup>15</sup>	37·41 <sup>274</sup>	58·216 <sup>21</sup>	42·24 <sup>34</sup>
28·0	10·694 <sup>4</sup>	45·43 <sup>181</sup>	10·82 <sup>7</sup>	34·67 <sup>284</sup>	58·195 <sup>5</sup>	41·90 <sup>17</sup>
Sept. 7·0	10·690 <sup>33</sup>	43·62 <sup>172</sup>	10·75 <sup>1</sup>	31·83 <sup>287</sup>	58·200 <sup>37</sup>	41·73 <sup>2</sup>
17·0	10·723 <sup>77</sup>	41·90 <sup>154</sup>	10·76 <sup>9</sup>	28·96 <sup>279</sup>	58·237 <sup>72</sup>	41·75 <sup>25</sup>
27·0	10·800 <sup>121</sup>	40·36 <sup>126</sup>	10·85 <sup>18</sup>	26·17 <sup>258</sup>	58·309 <sup>106</sup>	42·00 <sup>53</sup>
Oct. 6·9	10·921 <sup>170</sup>	39·10 <sup>90</sup>	11·03 <sup>27</sup>	23·59 <sup>228</sup>	58·415 <sup>147</sup>	42·53 <sup>77</sup>
16·9	11·091 <sup>216</sup>	38·20 <sup>55</sup>	11·30 <sup>35</sup>	21·31 <sup>187</sup>	58·562 <sup>186</sup>	43·30 <sup>104</sup>
26·9	11·307 <sup>256</sup>	37·65 <sup>9</sup>	11·65 <sup>42</sup>	19·44 <sup>138</sup>	58·748 <sup>224</sup>	44·34 <sup>132</sup>
Nov. 5·8	11·563 <sup>297</sup>	37·56 <sup>37</sup>	12·07 <sup>49</sup>	18·06 <sup>83</sup>	58·972 <sup>256</sup>	45·66 <sup>157</sup>
15·8	11·860 <sup>328</sup>	37·93 <sup>87</sup>	12·56 <sup>53</sup>	17·23 <sup>22</sup>	59·228 <sup>289</sup>	47·23 <sup>180</sup>
25·8	12·188 <sup>348</sup>	38·80 <sup>128</sup>	13·09 <sup>57</sup>	17·01 <sup>40</sup>	59·517 <sup>309</sup>	49·03 <sup>196</sup>
Dec. 5·8	12·536 <sup>358</sup>	40·08 <sup>173</sup>	13·66 <sup>58</sup>	17·41 <sup>103</sup>	59·826 <sup>321</sup>	50·99 <sup>208</sup>
15·7	12·894 <sup>360</sup>	41·81 <sup>208</sup>	14·24 <sup>57</sup>	18·44 <sup>161</sup>	60·147 <sup>323</sup>	53·07 <sup>211</sup>
25·7	13·254 <sup>341</sup>	43·89 <sup>239</sup>	14·81 <sup>55</sup>	20·05 <sup>216</sup>	60·470 <sup>315</sup>	55·18 <sup>208</sup>
35·7	13·595	46·28	15·36	22·21	60·785	57·26
Mean Place	9·739	33·60	10·40	17·49	57·299	34·67
Sec δ, Tan δ	1·172	—0·611	2·172	—1·928	1·000	—0·007
L α, L δ	0·00	—0·4	—0·01	—0·4	0·00	—0·4
ω α, ω δ	—0·04	+0·1	—0·13	+0·1	0·00	+0·1
AUTHORITY	A. E.		A. E.		A. E.	

# 350 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\nu$ Virginis. Mag. 4.2		$\beta$ Leonis. Mag. 2.2		$\beta$ Virginis. Mag. 3.8	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	h m II 41	° ' 6 57	h m II 45	° ' 15 0	h m II 46	° ' 2 II
Jan.	0.7 51.589 <sup>311</sup>	53.28 <sup>189</sup>	5.393 <sup>317</sup>	20.35 <sup>171</sup>	38.489 <sup>312</sup>	71.16 <sup>199</sup>
	10.7 51.900 <sup>287</sup>	51.39 <sup>167</sup>	5.710 <sup>296</sup>	18.64 <sup>140</sup>	38.801 <sup>288</sup>	69.17 <sup>184</sup>
	20.7 52.187 <sup>257</sup>	49.72 <sup>144</sup>	6.006 <sup>265</sup>	17.24 <sup>107</sup>	39.089 <sup>261</sup>	67.33 <sup>163</sup>
	30.6 52.444 <sup>218</sup>	48.28 <sup>114</sup>	6.271 <sup>225</sup>	16.17 <sup>76</sup>	39.350 <sup>220</sup>	65.70 <sup>139</sup>
Feb.	9.6 52.662 <sup>176</sup>	47.14 <sup>84</sup>	6.496 <sup>184</sup>	15.41 <sup>40</sup>	39.570 <sup>179</sup>	64.31 <sup>111</sup>
	19.6 52.838 <sup>131</sup>	46.30 <sup>54</sup>	6.680 <sup>137</sup>	15.01 <sup>7</sup>	39.749 <sup>137</sup>	63.20 <sup>84</sup>
Mar.	1.6 52.969 <sup>88</sup>	45.76 <sup>25</sup>	6.817 <sup>93</sup>	14.94 <sup>23</sup>	39.886 <sup>92</sup>	62.36 <sup>54</sup>
	11.5 53.057 <sup>45</sup>	45.51 <sup>1</sup>	6.910 <sup>45</sup>	15.17 <sup>52</sup>	39.978 <sup>52</sup>	61.82 <sup>29</sup>
	21.5 53.102 <sup>8</sup>	45.52 <sup>23</sup>	6.955 <sup>10</sup>	15.69 <sup>69</sup>	40.030 <sup>15</sup>	61.53 <sup>5</sup>
	31.5 53.110 <sup>25</sup>	45.75 <sup>42</sup>	6.965 <sup>23</sup>	16.38 <sup>88</sup>	40.045 <sup>17</sup>	61.48 <sup>14</sup>
Apr.	10.4 53.085 <sup>52</sup>	46.17 <sup>57</sup>	6.942 <sup>55</sup>	17.26 <sup>97</sup>	40.028 <sup>45</sup>	61.62 <sup>32</sup>
	20.4 53.033 <sup>73</sup>	46.74 <sup>67</sup>	6.887 <sup>76</sup>	18.23 <sup>104</sup>	39.983 <sup>66</sup>	61.94 <sup>46</sup>
	30.4 52.960 <sup>90</sup>	47.41 <sup>73</sup>	6.811 <sup>96</sup>	19.27 <sup>103</sup>	39.917 <sup>85</sup>	62.40 <sup>55</sup>
May	10.4 52.870 <sup>101</sup>	48.14 <sup>77</sup>	6.715 <sup>108</sup>	20.30 <sup>101</sup>	39.832 <sup>95</sup>	62.95 <sup>63</sup>
	20.3 52.769 <sup>109</sup>	48.91 <sup>77</sup>	6.607 <sup>117</sup>	21.31 <sup>93</sup>	39.737 <sup>103</sup>	63.58 <sup>68</sup>
	30.3 52.660 <sup>112</sup>	49.68 <sup>76</sup>	6.490 <sup>115</sup>	22.24 <sup>82</sup>	39.634 <sup>108</sup>	64.26 <sup>70</sup>
June	9.3 52.548 <sup>112</sup>	50.44 <sup>71</sup>	6.375 <sup>119</sup>	23.06 <sup>72</sup>	39.526 <sup>109</sup>	64.96 <sup>70</sup>
	19.3 52.436 <sup>109</sup>	51.15 <sup>65</sup>	6.256 <sup>117</sup>	23.78 <sup>57</sup>	39.417 <sup>107</sup>	65.66 <sup>69</sup>
	29.2 52.327 <sup>103</sup>	51.80 <sup>57</sup>	6.139 <sup>113</sup>	24.35 <sup>44</sup>	39.310 <sup>103</sup>	66.35 <sup>66</sup>
July	9.2 52.224 <sup>96</sup>	52.37 <sup>48</sup>	6.026 <sup>101</sup>	24.79 <sup>25</sup>	39.207 <sup>95</sup>	67.01 <sup>61</sup>
	19.2 52.128 <sup>83</sup>	52.85 <sup>37</sup>	5.925 <sup>87</sup>	25.04 <sup>7</sup>	39.112 <sup>85</sup>	67.62 <sup>53</sup>
	29.2 52.045 <sup>69</sup>	53.22 <sup>25</sup>	5.838 <sup>74</sup>	25.11 <sup>10</sup>	39.027 <sup>71</sup>	68.15 <sup>44</sup>
Aug.	8.1 51.976 <sup>52</sup>	53.47 <sup>9</sup>	5.764 <sup>57</sup>	25.01 <sup>31</sup>	38.956 <sup>54</sup>	68.59 <sup>32</sup>
	18.1 51.924 <sup>28</sup>	53.56 <sup>7</sup>	5.707 <sup>33</sup>	24.70 <sup>51</sup>	38.902 <sup>32</sup>	68.91 <sup>19</sup>
	28.1 51.896 <sup>2</sup>	53.49 <sup>27</sup>	5.674 <sup>7</sup>	24.19 <sup>74</sup>	38.870 <sup>6</sup>	69.10 <sup>0</sup>
Sept.	7.0 51.894 <sup>27</sup>	53.22 <sup>47</sup>	5.667 <sup>24</sup>	23.45 <sup>95</sup>	38.864 <sup>23</sup>	69.10 <sup>18</sup>
	17.0 51.921 <sup>60</sup>	52.75 <sup>70</sup>	5.691 <sup>59</sup>	22.50 <sup>119</sup>	38.887 <sup>58</sup>	68.92 <sup>43</sup>
	27.0 51.981 <sup>98</sup>	52.05 <sup>94</sup>	5.750 <sup>96</sup>	21.31 <sup>142</sup>	38.945 <sup>95</sup>	68.49 <sup>66</sup>
Oct.	7.0 52.079 <sup>138</sup>	51.11 <sup>119</sup>	5.846 <sup>135</sup>	19.89 <sup>161</sup>	39.040 <sup>134</sup>	67.83 <sup>94</sup>
	16.9 52.217 <sup>178</sup>	49.92 <sup>143</sup>	5.981 <sup>176</sup>	18.28 <sup>183</sup>	39.174 <sup>175</sup>	66.89 <sup>117</sup>
	26.9 52.395 <sup>217</sup>	48.49 <sup>165</sup>	6.157 <sup>216</sup>	16.45 <sup>201</sup>	39.349 <sup>215</sup>	65.72 <sup>145</sup>
Nov.	5.9 52.612 <sup>252</sup>	46.84 <sup>184</sup>	6.373 <sup>253</sup>	14.44 <sup>212</sup>	39.564 <sup>250</sup>	64.27 <sup>166</sup>
	15.8 52.864 <sup>284</sup>	45.00 <sup>200</sup>	6.626 <sup>287</sup>	12.32 <sup>220</sup>	39.814 <sup>283</sup>	62.61 <sup>187</sup>
	25.8 53.148 <sup>308</sup>	43.00 <sup>209</sup>	6.913 <sup>309</sup>	10.12 <sup>221</sup>	40.097 <sup>306</sup>	60.74 <sup>202</sup>
Dec.	5.8 53.456 <sup>323</sup>	40.91 <sup>213</sup>	7.222 <sup>326</sup>	7.91 <sup>216</sup>	40.403 <sup>321</sup>	58.72 <sup>210</sup>
	15.8 53.779 <sup>327</sup>	38.78 <sup>209</sup>	7.548 <sup>332</sup>	5.75 <sup>202</sup>	40.724 <sup>326</sup>	56.62 <sup>212</sup>
	25.7 54.106 <sup>320</sup>	36.69 <sup>197</sup>	7.880 <sup>327</sup>	3.73 <sup>184</sup>	41.050 <sup>321</sup>	54.50 <sup>205</sup>
	35.7 54.426	34.72	8.207	1.89	41.371	52.45
Mean Place	51.057	59.68	4.963	29.32	37.936	75.74
Sec $\delta$ , Tan $\delta$	1.007	+0.122	1.035	+0.268	1.001	+0.038
L $\alpha$ , L $\delta$	0.00	-0.4	0.00	-0.4	0.00	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.01	+0.1	+0.02	+0.1	0.00	+0.1
AUTHORITY			A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 351

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	B Centauri. Mag. 4.7		$\gamma$ Ursæ Majoris. Mag. 2.5		$\pi$ Virginis. Mag. 4.6	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> II 47	<sup>m</sup> 44 44	<sup>h</sup> II 49	<sup>m</sup> 54 7	<sup>h</sup> II 56	<sup>m</sup> 7 2
Jan. 0.7	15.571 <sup>388</sup>	12.15 <sup>242</sup>	44.077 <sup>470</sup>	23.06 <sup>55</sup>	52.993 <sup>315</sup>	51.50 <sup>191</sup>
10.7	15.959 <sup>355</sup>	14.57 <sup>273</sup>	44.547 <sup>442</sup>	22.51 <sup>0</sup>	53.308 <sup>295</sup>	49.59 <sup>171</sup>
20.7	16.314 <sup>313</sup>	17.30 <sup>295</sup>	44.989 <sup>399</sup>	22.51 <sup>56</sup>	53.603 <sup>266</sup>	47.88 <sup>145</sup>
30.6	16.627 <sup>265</sup>	20.25 <sup>310</sup>	45.388 <sup>344</sup>	23.07 <sup>107</sup>	53.869 <sup>230</sup>	46.43 <sup>116</sup>
Feb. 9.6	16.892 <sup>211</sup>	23.35 <sup>314</sup>	45.732 <sup>280</sup>	24.14 <sup>160</sup>	54.099 <sup>189</sup>	45.27 <sup>86</sup>
19.6	17.103 <sup>156</sup>	26.49 <sup>312</sup>	46.012 <sup>206</sup>	25.74 <sup>196</sup>	54.288 <sup>145</sup>	44.41 <sup>55</sup>
Mar. 1.6	17.259 <sup>102</sup>	29.61 <sup>303</sup>	46.218 <sup>135</sup>	27.70 <sup>231</sup>	54.433 <sup>103</sup>	43.86 <sup>25</sup>
11.5	17.361 <sup>50</sup>	32.64 <sup>288</sup>	46.353 <sup>59</sup>	30.01 <sup>249</sup>	54.536 <sup>61</sup>	43.61 <sup>2</sup>
21.5	17.411 <sup>2</sup>	35.52 <sup>267</sup>	46.412 <sup>7</sup>	32.50 <sup>258</sup>	54.597 <sup>23</sup>	43.63 <sup>24</sup>
31.5	17.413 <sup>41</sup>	38.19 <sup>241</sup>	46.405 <sup>70</sup>	35.08 <sup>259</sup>	54.620 <sup>10</sup>	43.87 <sup>45</sup>
Apr. 10.4	17.372 <sup>78</sup>	40.60 <sup>213</sup>	46.335 <sup>126</sup>	37.67 <sup>245</sup>	54.610 <sup>38</sup>	44.32 <sup>59</sup>
20.4	17.294 <sup>110</sup>	42.73 <sup>180</sup>	46.209 <sup>171</sup>	40.12 <sup>226</sup>	54.572 <sup>62</sup>	44.91 <sup>71</sup>
30.4	17.184 <sup>136</sup>	44.53 <sup>144</sup>	46.038 <sup>207</sup>	42.38 <sup>200</sup>	54.510 <sup>80</sup>	45.62 <sup>77</sup>
May 10.4	17.048 <sup>159</sup>	45.97 <sup>106</sup>	45.831 <sup>233</sup>	44.38 <sup>163</sup>	54.430 <sup>93</sup>	46.39 <sup>80</sup>
20.3	16.889 <sup>175</sup>	47.03 <sup>68</sup>	45.598 <sup>253</sup>	46.01 <sup>128</sup>	54.337 <sup>103</sup>	47.19 <sup>81</sup>
30.3	16.714 <sup>186</sup>	47.71 <sup>26</sup>	45.345 <sup>255</sup>	47.29 <sup>80</sup>	54.234 <sup>109</sup>	48.00 <sup>79</sup>
June 9.3	16.528 <sup>194</sup>	47.97 <sup>14</sup>	45.090 <sup>261</sup>	48.09 <sup>39</sup>	54.125 <sup>111</sup>	48.79 <sup>74</sup>
19.3	16.334 <sup>196</sup>	47.83 <sup>54</sup>	44.829 <sup>250</sup>	48.48 <sup>7</sup>	54.014 <sup>111</sup>	49.53 <sup>68</sup>
29.2	16.138 <sup>193</sup>	47.29 <sup>93</sup>	44.579 <sup>238</sup>	48.41 <sup>54</sup>	53.903 <sup>107</sup>	50.21 <sup>59</sup>
July 9.2	15.945 <sup>184</sup>	46.36 <sup>128</sup>	44.341 <sup>219</sup>	47.87 <sup>95</sup>	53.796 <sup>101</sup>	50.80 <sup>50</sup>
19.2	15.761 <sup>169</sup>	45.08 <sup>161</sup>	44.122 <sup>195</sup>	46.92 <sup>138</sup>	53.695 <sup>93</sup>	51.30 <sup>38</sup>
29.2	15.592 <sup>148</sup>	43.47 <sup>189</sup>	43.927 <sup>163</sup>	45.54 <sup>177</sup>	53.602 <sup>79</sup>	51.68 <sup>25</sup>
Aug. 8.1	15.444 <sup>121</sup>	41.58 <sup>210</sup>	43.764 <sup>129</sup>	43.77 <sup>212</sup>	53.523 <sup>63</sup>	51.93 <sup>9</sup>
18.1	15.323 <sup>85</sup>	39.48 <sup>225</sup>	43.635 <sup>88</sup>	41.65 <sup>243</sup>	53.460 <sup>42</sup>	52.02 <sup>7</sup>
28.1	15.238 <sup>45</sup>	37.23 <sup>231</sup>	43.547 <sup>45</sup>	39.22 <sup>272</sup>	53.418 <sup>18</sup>	51.95 <sup>27</sup>
Sept. 7.0	15.193 <sup>4</sup>	34.92 <sup>228</sup>	43.502 <sup>6</sup>	36.50 <sup>292</sup>	53.400 <sup>12</sup>	51.68 <sup>47</sup>
17.0	15.197 <sup>56</sup>	32.64 <sup>217</sup>	43.508 <sup>61</sup>	33.58 <sup>313</sup>	53.412 <sup>46</sup>	51.21 <sup>71</sup>
27.0	15.253 <sup>113</sup>	30.47 <sup>195</sup>	43.569 <sup>117</sup>	30.45 <sup>322</sup>	53.458 <sup>82</sup>	50.50 <sup>94</sup>
Oct. 7.0	15.366 <sup>172</sup>	28.52 <sup>164</sup>	43.686 <sup>177</sup>	27.23 <sup>328</sup>	53.540 <sup>123</sup>	49.56 <sup>119</sup>
16.9	15.538 <sup>228</sup>	26.88 <sup>127</sup>	43.863 <sup>237</sup>	23.95 <sup>326</sup>	53.663 <sup>164</sup>	48.37 <sup>143</sup>
26.9	15.766 <sup>282</sup>	25.61 <sup>81</sup>	44.100 <sup>298</sup>	20.69 <sup>317</sup>	53.827 <sup>205</sup>	46.94 <sup>167</sup>
Nov. 5.9	16.048 <sup>330</sup>	24.80 <sup>30</sup>	44.398 <sup>355</sup>	17.52 <sup>297</sup>	54.032 <sup>243</sup>	45.27 <sup>185</sup>
15.8	16.378 <sup>369</sup>	24.50 <sup>22</sup>	44.753 <sup>403</sup>	14.55 <sup>275</sup>	54.275 <sup>276</sup>	43.42 <sup>200</sup>
25.8	16.747 <sup>397</sup>	24.72 <sup>76</sup>	45.156 <sup>441</sup>	11.80 <sup>235</sup>	54.551 <sup>302</sup>	41.42 <sup>211</sup>
Dec. 5.8	17.144 <sup>411</sup>	25.48 <sup>129</sup>	45.597 <sup>471</sup>	9.45 <sup>196</sup>	54.853 <sup>320</sup>	39.31 <sup>215</sup>
15.8	17.555 <sup>412</sup>	26.77 <sup>176</sup>	46.068 <sup>484</sup>	7.49 <sup>146</sup>	55.173 <sup>327</sup>	37.16 <sup>211</sup>
25.7	17.967 <sup>400</sup>	28.53 <sup>219</sup>	46.552 <sup>481</sup>	6.03 <sup>93</sup>	55.500 <sup>323</sup>	35.05 <sup>201</sup>
35.7	18.367	30.72	47.033	5.10	55.823	33.04
Mean Place	14.252	22.79	44.193	42.37	52.551	57.35
Sec $\delta$ , Tan $\delta$	1.408	-0.991	1.707	+1.383	1.008	+0.124
L $\alpha$ , L $\delta$	0.00	-0.4	0.00	-0.4	0.00	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.07	+0.1	+0.09	0.0	+0.01	0.0
AUTHORITY	A. N.		A. E.			

# 352 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	o Virginis. Mag. 4.2			δ Centauri. Mag. 2.9			ε Corvi. Mag. 3.2		
	R. A.		Dec. N.	R. A.		Dec. S.	R. A.		Dec. S.
	h m		° '	h m		° '	h m		° '
	12 I		9 9	12 4		50 17	12 6		22 II
Jan.	0.7	14.584 <sup>316</sup>	51.49 <sup>187</sup>	19.826 <sup>432</sup>		4.56 <sup>223</sup>	7.357 <sup>330</sup>		5.03 <sup>228</sup>
	10.7	14.900 <sup>298</sup>	49.62 <sup>166</sup>	20.258 <sup>399</sup>		6.79 <sup>258</sup>	7.687 <sup>311</sup>		7.31 <sup>234</sup>
	20.7	15.198 <sup>272</sup>	47.96 <sup>137</sup>	20.657 <sup>359</sup>		9.37 <sup>288</sup>	7.998 <sup>278</sup>		9.65 <sup>241</sup>
	30.6	15.470 <sup>232</sup>	46.59 <sup>106</sup>	21.016 <sup>307</sup>		12.25 <sup>308</sup>	8.276 <sup>242</sup>		12.06 <sup>236</sup>
Feb.	9.6	15.702 <sup>193</sup>	45.53 <sup>77</sup>	21.323 <sup>252</sup>		15.33 <sup>319</sup>	8.518 <sup>199</sup>		14.42 <sup>228</sup>
	19.6	15.895 <sup>152</sup>	44.76 <sup>42</sup>	21.575 <sup>193</sup>		18.52 <sup>325</sup>	8.717 <sup>158</sup>		16.70 <sup>216</sup>
Mar.	1.6	16.047 <sup>106</sup>	44.34 <sup>13</sup>	21.768 <sup>138</sup>		21.77 <sup>320</sup>	8.875 <sup>113</sup>		18.86 <sup>193</sup>
	11.5	16.153 <sup>66</sup>	44.21 <sup>13</sup>	21.906 <sup>79</sup>		24.97 <sup>310</sup>	8.988 <sup>72</sup>		20.79 <sup>175</sup>
	21.5	16.219 <sup>27</sup>	44.34 <sup>39</sup>	21.985 <sup>28</sup>		28.07 <sup>292</sup>	9.060 <sup>34</sup>		22.54 <sup>153</sup>
	31.5	16.246 <sup>5</sup>	44.73 <sup>57</sup>	22.013 <sup>22</sup>		30.99 <sup>271</sup>	9.094 <sup>2</sup>		24.07 <sup>127</sup>
Apr.	10.4	16.241 <sup>36</sup>	45.30 <sup>69</sup>	21.991 <sup>66</sup>		33.70 <sup>245</sup>	9.092 <sup>30</sup>		25.34 <sup>101</sup>
	20.4	16.205 <sup>59</sup>	45.99 <sup>83</sup>	21.925 <sup>104</sup>		36.15 <sup>212</sup>	9.062 <sup>53</sup>		26.35 <sup>80</sup>
	30.4	16.146 <sup>80</sup>	46.82 <sup>87</sup>	21.821 <sup>139</sup>		38.27 <sup>178</sup>	9.009 <sup>78</sup>		27.15 <sup>51</sup>
May	10.4	16.066 <sup>91</sup>	47.69 <sup>89</sup>	21.682 <sup>165</sup>		40.05 <sup>139</sup>	8.931 <sup>94</sup>		27.66 <sup>27</sup>
	20.3	15.975 <sup>104</sup>	48.58 <sup>87</sup>	21.517 <sup>190</sup>		41.44 <sup>100</sup>	8.837 <sup>106</sup>		27.93 <sup>5</sup>
	30.3	15.871 <sup>111</sup>	49.45 <sup>82</sup>	21.327 <sup>206</sup>		42.44 <sup>57</sup>	8.731 <sup>116</sup>		27.98 <sup>19</sup>
June	9.3	15.760 <sup>113</sup>	50.27 <sup>76</sup>	21.121 <sup>220</sup>		43.01 <sup>15</sup>	8.615 <sup>123</sup>		27.79 <sup>44</sup>
	19.3	15.647 <sup>113</sup>	51.03 <sup>67</sup>	20.901 <sup>226</sup>		43.16 <sup>29</sup>	8.492 <sup>127</sup>		27.35 <sup>61</sup>
	29.2	15.534 <sup>110</sup>	51.70 <sup>60</sup>	20.675 <sup>229</sup>		42.87 <sup>71</sup>	8.365 <sup>125</sup>		26.74 <sup>86</sup>
July	9.2	15.424 <sup>104</sup>	52.30 <sup>44</sup>	20.446 <sup>220</sup>		42.16 <sup>111</sup>	8.240 <sup>125</sup>		25.88 <sup>101</sup>
	19.2	15.320 <sup>98</sup>	52.74 <sup>31</sup>	20.226 <sup>211</sup>		41.05 <sup>149</sup>	8.115 <sup>116</sup>		24.87 <sup>115</sup>
	29.1	15.222 <sup>81</sup>	53.05 <sup>18</sup>	20.015 <sup>188</sup>		39.56 <sup>182</sup>	7.999 <sup>102</sup>		23.72 <sup>123</sup>
Aug.	8.1	15.141 <sup>67</sup>	53.23 <sup>0</sup>	19.827 <sup>161</sup>		37.74 <sup>211</sup>	7.897 <sup>87</sup>		22.49 <sup>133</sup>
	18.1	15.074 <sup>47</sup>	53.23 <sup>18</sup>	19.666 <sup>125</sup>		35.63 <sup>229</sup>	7.810 <sup>63</sup>		21.16 <sup>134</sup>
	28.1	15.027 <sup>20</sup>	53.05 <sup>40</sup>	19.541 <sup>77</sup>		33.34 <sup>243</sup>	7.747 <sup>36</sup>		19.82 <sup>133</sup>
Sept.	7.0	15.007 <sup>5</sup>	52.65 <sup>61</sup>	19.464 <sup>26</sup>		30.91 <sup>244</sup>	7.711 <sup>2</sup>		18.49 <sup>121</sup>
	17.0	15.012 <sup>44</sup>	52.04 <sup>83</sup>	19.438 <sup>34</sup>		28.47 <sup>239</sup>	7.709 <sup>34</sup>		17.28 <sup>101</sup>
	27.0	15.056 <sup>77</sup>	51.21 <sup>107</sup>	19.472 <sup>95</sup>		26.08 <sup>222</sup>	7.743 <sup>80</sup>		16.27 <sup>80</sup>
Oct.	7.0	15.133 <sup>120</sup>	50.14 <sup>132</sup>	19.567 <sup>162</sup>		23.86 <sup>196</sup>	7.823 <sup>124</sup>		15.47 <sup>53</sup>
	16.9	15.253 <sup>159</sup>	48.82 <sup>152</sup>	19.729 <sup>227</sup>		21.90 <sup>162</sup>	7.947 <sup>168</sup>		14.94 <sup>19</sup>
	26.9	15.412 <sup>202</sup>	47.30 <sup>177</sup>	19.956 <sup>289</sup>		20.28 <sup>118</sup>	8.115 <sup>215</sup>		14.75 <sup>18</sup>
Nov.	5.9	15.614 <sup>238</sup>	45.53 <sup>193</sup>	20.245 <sup>344</sup>		19.10 <sup>68</sup>	8.330 <sup>253</sup>		14.93 <sup>57</sup>
	15.8	15.852 <sup>276</sup>	43.60 <sup>209</sup>	20.589 <sup>391</sup>		18.42 <sup>15</sup>	8.583 <sup>290</sup>		15.50 <sup>95</sup>
	25.8	16.128 <sup>300</sup>	41.51 <sup>215</sup>	20.980 <sup>424</sup>		18.27 <sup>41</sup>	8.873 <sup>318</sup>		16.45 <sup>130</sup>
Dec.	5.8	16.428 <sup>318</sup>	39.36 <sup>217</sup>	21.404 <sup>445</sup>		18.68 <sup>95</sup>	9.191 <sup>336</sup>		17.75 <sup>165</sup>
	15.8	16.746 <sup>327</sup>	37.19 <sup>212</sup>	21.849 <sup>450</sup>		19.63 <sup>148</sup>	9.527 <sup>342</sup>		19.40 <sup>197</sup>
	25.7	17.073 <sup>322</sup>	35.07 <sup>196</sup>	22.299 <sup>443</sup>		21.11 <sup>196</sup>	9.869 <sup>337</sup>		21.37 <sup>216</sup>
	35.7	17.395	33.11	22.742		23.07	10.206		23.53
Mean Place	14.192		57.88	18.472		17.55	6.616		9.77
Sec δ, Tan δ	1.013		+0.161	1.565		-1.204	1.080		-0.408
L α, L δ	0.00		-0.4	0.00		-0.4	0.00		-0.4
ω α, ω δ	+0.01		0.0	-0.08		0.0	-0.03		0.0
AUTHORITY	A. E.			A. E.			A. E.		

# APPARENT PLACES OF STARS, 1922. 353

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	δ Crucis. Mag. 3·1		δ Ursæ Majoris. Mag. 3·4		γ Corvi. Mag. 2·8		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.	
	h m 12 10	58 18	h m 12 11	57 27	h m 12 11	17 6	
Jan.	0·7 10·7 20·7 30·7	61·235 <sup>s</sup> <sub>508</sub> 61·743 <sub>472</sub> 62·215 <sub>424</sub> 62·639 <sub>367</sub>	39·61 <sub>206</sub> 41·67 <sub>248</sub> 44·15 <sub>285</sub> 47·00 <sub>312</sub>	34·086 <sup>s</sup> <sub>509</sub> 34·595 <sub>486</sub> 35·081 <sub>448</sub> 35·529 <sub>393</sub>	38·20 <sub>73</sub> 37·47 <sub>14</sub> 37·33 <sub>45</sub> 37·78 <sub>104</sub>	48·166 <sup>s</sup> <sub>326</sub> 48·492 <sub>305</sub> 48·797 <sub>277</sub> 49·074 <sub>242</sub>	28·93 <sub>221</sub> 31·14 <sub>226</sub> 33·40 <sub>226</sub> 35·66 <sub>218</sub>
Feb.	9·6 19·6	63·006 <sub>303</sub> 63·309 <sub>235</sub>	50·12 <sub>330</sub> 53·42 <sub>340</sub>	35·922 <sub>330</sub> 36·252 <sub>256</sub>	38·82 <sub>154</sub> 40·36 <sub>200</sub>	49·316 <sub>202</sub> 49·518 <sub>161</sub>	37·84 <sub>204</sub> 39·88 <sub>188</sub>
Mar.	1·6 11·6 21·5 31·5	63·544 <sub>168</sub> 63·712 <sub>100</sub> 63·812 <sub>36</sub> 63·848 <sub>23</sub>	56·82 <sub>341</sub> 60·23 <sub>336</sub> 63·59 <sub>323</sub> 66·82 <sub>303</sub>	36·508 <sub>179</sub> 36·687 <sub>101</sub> 36·788 <sub>23</sub> 36·811 <sub>45</sub>	42·36 <sub>236</sub> 44·72 <sub>258</sub> 47·30 <sub>274</sub> 50·04 <sub>274</sub>	49·679 <sub>117</sub> 49·796 <sub>77</sub> 49·873 <sub>40</sub> 49·913 <sub>6</sub>	41·76 <sub>167</sub> 43·43 <sub>144</sub> 44·87 <sub>122</sub> 46·09 <sub>97</sub>
Apr.	10·5 20·4 30·4	63·825 <sub>77</sub> 63·748 <sub>126</sub> 63·622 <sub>170</sub>	69·85 <sub>279</sub> 72·64 <sub>249</sub> 75·13 <sub>213</sub>	36·766 <sub>109</sub> 36·657 <sub>164</sub> 36·493 <sub>209</sub>	52·78 <sub>266</sub> 55·44 <sub>249</sub> 57·93 <sub>220</sub>	49·919 <sub>23</sub> 49·896 <sub>48</sub> 49·848 <sub>68</sub>	47·06 <sub>75</sub> 47·81 <sub>52</sub> 48·33 <sub>30</sub>
May	10·4 20·4 30·3	63·452 <sub>207</sub> 63·245 <sub>239</sub> 63·006 <sub>265</sub>	77·26 <sub>175</sub> 79·01 <sub>133</sub> 80·34 <sub>88</sub>	36·284 <sub>244</sub> 36·040 <sub>269</sub> 35·771 <sub>284</sub>	60·13 <sub>187</sub> 62·00 <sub>149</sub> 63·49 <sub>104</sub>	49·780 <sub>86</sub> 49·694 <sub>98</sub> 49·596 <sub>108</sub>	48·63 <sub>9</sub> 48·72 <sub>11</sub> 48·61 <sub>30</sub>
June	9·3 19·3 29·2	62·741 <sub>283</sub> 62·458 <sub>295</sub> 62·163 <sub>298</sub>	81·22 <sub>41</sub> 81·63 <sub>6</sub> 81·57 <sub>54</sub>	35·487 <sub>293</sub> 35·194 <sub>291</sub> 34·903 <sub>280</sub>	64·53 <sub>57</sub> 65·10 <sub>9</sub> 65·19 <sub>37</sub>	49·488 <sub>115</sub> 49·373 <sub>119</sub> 49·254 <sub>120</sub>	48·31 <sub>48</sub> 47·83 <sub>65</sub> 47·18 <sub>79</sub>
July	9·2 19·2 29·2	61·865 <sub>294</sub> 61·571 <sub>279</sub> 61·292 <sub>254</sub>	81·03 <sub>99</sub> 80·04 <sub>143</sub> 78·61 <sub>181</sub>	34·623 <sub>266</sub> 34·357 <sub>243</sub> 34·114 <sub>215</sub>	64·82 <sub>85</sub> 63·97 <sub>130</sub> 62·67 <sub>171</sub>	49·134 <sub>117</sub> 49·017 <sub>110</sub> 48·907 <sub>100</sub>	46·39 <sub>93</sub> 45·46 <sub>102</sub> 44·44 <sub>109</sub>
Aug.	8·1 18·1 28·1	61·038 <sub>220</sub> 60·818 <sub>175</sub> 60·643 <sub>119</sub>	76·80 <sub>215</sub> 74·65 <sub>241</sub> 72·24 <sub>259</sub>	33·899 <sub>181</sub> 33·718 <sub>142</sub> 33·576 <sub>93</sub>	60·96 <sub>212</sub> 58·84 <sub>243</sub> 56·41 <sub>277</sub>	48·807 <sub>85</sub> 48·722 <sub>64</sub> 48·658 <sub>39</sub>	43·35 <sub>112</sub> 42·23 <sub>110</sub> 41·13 <sub>104</sub>
Sept.	7·1 17·0 27·0	60·524 <sub>55</sub> 60·469 <sub>17</sub> 60·486 <sub>95</sub>	69·65 <sub>268</sub> 66·97 <sub>267</sub> 64·30 <sub>254</sub>	33·483 <sub>41</sub> 33·442 <sub>18</sub> 33·460 <sub>79</sub>	53·64 <sub>301</sub> 50·63 <sub>323</sub> 47·40 <sub>336</sub>	48·619 <sub>7</sub> 48·612 <sub>30</sub> 48·642 <sub>69</sub>	40·09 <sub>92</sub> 39·17 <sub>74</sub> 38·43 <sub>52</sub>
Oct.	7·0 16·9 26·9	60·581 <sub>175</sub> 60·756 <sub>254</sub> 61·010 <sub>330</sub>	61·76 <sub>231</sub> 59·45 <sub>199</sub> 57·46 <sub>156</sub>	33·539 <sub>144</sub> 33·683 <sub>213</sub> 33·896 <sub>279</sub>	44·04 <sub>345</sub> 40·59 <sub>342</sub> 37·17 <sub>335</sub>	48·711 <sub>114</sub> 48·825 <sub>159</sub> 48·984 <sub>203</sub>	37·91 <sub>24</sub> 37·67 <sub>8</sub> 37·75 <sub>42</sub>
Nov.	5·9 15·9 25·8	61·340 <sub>396</sub> 61·736 <sub>453</sub> 62·189 <sub>494</sub>	55·90 <sub>107</sub> 54·83 <sub>52</sub> 54·31 <sub>6</sub>	34·175 <sub>345</sub> 34·520 <sub>402</sub> 34·922 <sub>450</sub>	33·82 <sub>317</sub> 30·65 <sub>293</sub> 27·72 <sub>258</sub>	49·187 <sub>244</sub> 49·431 <sub>280</sub> 49·711 <sub>308</sub>	38·17 <sub>77</sub> 38·94 <sub>113</sub> 40·07 <sub>145</sub>
Dec.	5·8 15·8 25·8 35·7	62·683 <sub>520</sub> 63·203 <sub>528</sub> 63·731 <sub>517</sub> 64·248 <sub>517</sub>	54·37 <sub>65</sub> 55·02 <sub>122</sub> 56·24 <sub>176</sub> 58·00 <sub>176</sub>	35·372 <sub>489</sub> 35·861 <sub>511</sub> 36·372 <sub>517</sub> 36·889 <sub>517</sub>	25·14 <sub>217</sub> 22·97 <sub>167</sub> 21·30 <sub>110</sub> 20·20 <sub>110</sub>	50·019 <sub>327</sub> 50·346 <sub>334</sub> 50·680 <sub>332</sub> 51·012 <sub>332</sub>	41·52 <sub>174</sub> 43·26 <sub>198</sub> 45·24 <sub>214</sub> 47·38 <sub>214</sub>
Mean Place	59·618	54·72	34·532	57·43	47·529	32·18	
Sec δ, Tan δ	1·904	—1·620	1·859	+1·568	1·046	—0·308	
L α, L δ	0·00	—0·4	0·00	—0·4	0·00	—0·4	
ω α, ω δ	—0·11	0·0	+0·10	0·0	—0·02	0·0	
AUTHORITY	A. N.		A. E.		A. N.		

# APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Chamæleontis. Mag. 4.4		$\eta$ Virginis. Mag. 4.0		$\alpha$ Crucis. Mag. 1.6	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	h m 12 13	$78^{\circ} 52'$	h m 12 15	$0^{\circ} 14'$	h m 12 22	$62^{\circ} 39'$
Jan.	0.7 10.7 20.7 30.7	$48^{\circ} 38'$ $49^{\circ} 59'$ $50^{\circ} 72'$ $51^{\circ} 73'$	$26^{\circ} 50'$ $28^{\circ} 17'$ $30^{\circ} 35'$ $33^{\circ} 03'$	$55^{\circ} 324'$ $55^{\circ} 643'$ $55^{\circ} 942'$ $56^{\circ} 215'$	$2^{\circ} 96'$ $5^{\circ} 00'$ $6^{\circ} 92'$ $8^{\circ} 66'$	$16^{\circ} 48'$ $17^{\circ} 06'$ $17^{\circ} 59'$ $18^{\circ} 08'$
Feb.	9.6 19.6	$52^{\circ} 61'$ $53^{\circ} 33'$	$36^{\circ} 11'$ $39^{\circ} 50'$	$56^{\circ} 458'$ $56^{\circ} 659'$	$10^{\circ} 18'$ $11^{\circ} 44'$	$18^{\circ} 51'$ $18^{\circ} 87'$
Mar.	1.6 11.6	$53^{\circ} 88'$ $54^{\circ} 26'$	$43^{\circ} 12'$ $46^{\circ} 86'$	$56^{\circ} 822'$ $56^{\circ} 942'$	$12^{\circ} 42'$ $13^{\circ} 12'$	$19^{\circ} 16'$ $19^{\circ} 37'$
	21.5 31.5	$54^{\circ} 47'$ $54^{\circ} 51'$	$50^{\circ} 64'$ $54^{\circ} 36'$	$57^{\circ} 024'$ $57^{\circ} 066'$	$13^{\circ} 55'$ $13^{\circ} 73'$	$19^{\circ} 50'$ $19^{\circ} 57'$
Apr.	10.5 20.4	$54^{\circ} 38'$ $54^{\circ} 09'$	$57^{\circ} 97'$ $61^{\circ} 40'$	$57^{\circ} 076'$ $57^{\circ} 059'$	$13^{\circ} 70'$ $13^{\circ} 52'$	$19^{\circ} 56'$ $19^{\circ} 49'$
May	30.4 10.4	$53^{\circ} 66'$ $53^{\circ} 09'$	$64^{\circ} 54'$ $67^{\circ} 36'$	$57^{\circ} 014'$ $56^{\circ} 954'$	$13^{\circ} 14'$ $12^{\circ} 64'$	$19^{\circ} 36'$ $19^{\circ} 18'$
	20.4 30.3	$52^{\circ} 41'$ $51^{\circ} 62'$	$69^{\circ} 76'$ $71^{\circ} 74'$	$56^{\circ} 873'$ $56^{\circ} 780'$	$12^{\circ} 05'$ $11^{\circ} 41'$	$18^{\circ} 95'$ $18^{\circ} 68'$
June	9.3 19.3	$50^{\circ} 75'$ $49^{\circ} 81'$	$73^{\circ} 23'$ $74^{\circ} 21'$	$56^{\circ} 681'$ $56^{\circ} 573'$	$10^{\circ} 73'$ $10^{\circ} 03'$	$18^{\circ} 37'$ $18^{\circ} 04'$
July	29.2 9.2	$48^{\circ} 85'$ $47^{\circ} 87'$	$74^{\circ} 60'$ $74^{\circ} 47'$	$56^{\circ} 463'$ $56^{\circ} 352'$	$9^{\circ} 31'$ $8^{\circ} 61'$	$17^{\circ} 70'$ $17^{\circ} 34'$
	19.2 29.2	$46^{\circ} 90'$ $45^{\circ} 99'$	$73^{\circ} 77'$ $72^{\circ} 55'$	$56^{\circ} 245'$ $56^{\circ} 142'$	$7^{\circ} 95'$ $7^{\circ} 32'$	$16^{\circ} 99'$ $16^{\circ} 65'$
Aug.	8.1 18.1	$45^{\circ} 15'$ $44^{\circ} 42'$	$70^{\circ} 86'$ $68^{\circ} 67'$	$56^{\circ} 051'$ $55^{\circ} 971'$	$6^{\circ} 81'$ $6^{\circ} 38'$	$16^{\circ} 33'$ $16^{\circ} 06'$
	28.1 7.1	$43^{\circ} 82'$ $43^{\circ} 39'$	$66^{\circ} 15'$ $63^{\circ} 31'$	$55^{\circ} 914'$ $55^{\circ} 877'$	$6^{\circ} 09'$ $5^{\circ} 93'$	$15^{\circ} 83'$ $15^{\circ} 67'$
Sept.	17.0 27.0	$43^{\circ} 14'$ $43^{\circ} 10'$	$60^{\circ} 30'$ $57^{\circ} 19'$	$55^{\circ} 872'$ $55^{\circ} 897'$	$6^{\circ} 00'$ $6^{\circ} 27'$	$15^{\circ} 58'$ $15^{\circ} 57'$
Oct.	7.0 16.9	$43^{\circ} 26'$ $43^{\circ} 64'$	$54^{\circ} 13'$ $51^{\circ} 20'$	$55^{\circ} 963'$ $56^{\circ} 067'$	$6^{\circ} 79'$ $7^{\circ} 54'$	$15^{\circ} 65'$ $15^{\circ} 82'$
Nov.	26.9 5.9	$44^{\circ} 23'$ $45^{\circ} 00'$	$48^{\circ} 57'$ $46^{\circ} 32'$	$56^{\circ} 213'$ $56^{\circ} 404'$	$8^{\circ} 58'$ $9^{\circ} 89'$	$16^{\circ} 08'$ $16^{\circ} 44'$
	15.9 25.8	$45^{\circ} 95'$ $47^{\circ} 03'$	$44^{\circ} 54'$ $43^{\circ} 31'$	$56^{\circ} 632'$ $56^{\circ} 898'$	$11^{\circ} 41'$ $13^{\circ} 19'$	$16^{\circ} 86'$ $17^{\circ} 36'$
Dec.	5.8 15.8	$48^{\circ} 22'$ $49^{\circ} 46'$	$42^{\circ} 71'$ $42^{\circ} 72'$	$57^{\circ} 192'$ $57^{\circ} 504'$	$15^{\circ} 13'$ $17^{\circ} 20'$	$17^{\circ} 90'$ $18^{\circ} 48'$
	25.8 35.7	$50^{\circ} 72'$ $51^{\circ} 96'$	$43^{\circ} 41'$ $44^{\circ} 70'$	$57^{\circ} 829'$ $58^{\circ} 152'$	$19^{\circ} 32'$ $21^{\circ} 37'$	$19^{\circ} 07'$ $19^{\circ} 65'$
Mean Place	44.11	44.90	54.915	0.43	14.76	61.38
Sec $\delta$ , Tan $\delta$	5.185	-5.087	1.000	-0.004	2.178	-1.935
L $\alpha$ , L $\delta$	+0.01	-0.4	0.00	-0.4	0.00	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.34	-0.1	0.00	-0.1	-0.13	-0.1
AUTHORITY	A. E.		A. E.		A. E.	



# APPARENT PLACES OF STARS, 1922. 355

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\delta$ Corvi. Mag. 3.1		$\gamma$ Crucis. Mag. 1.6		$\beta$ Corvi. Mag. 2.8	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 12 25	<sup>°</sup> 16 4	<sup>h</sup> 12 26	<sup>°</sup> 56 40	<sup>h</sup> 12 30	<sup>°</sup> 22 57
Jan. 0.7	50.111 <sup>s</sup>	49.29 <sup>°</sup>	51.101 <sup>s</sup>	20.48 <sup>°</sup>	17.737 <sup>s</sup>	49.99 <sup>°</sup>
10.7	50.438 <sup>327</sup>	51.46 <sup>217</sup>	51.601 <sup>500</sup>	22.38 <sup>190</sup>	18.074 <sup>337</sup>	52.13 <sup>214</sup>
20.7	50.750 <sup>312</sup>	53.63 <sup>217</sup>	52.071 <sup>470</sup>	24.71 <sup>233</sup>	18.395 <sup>321</sup>	54.37 <sup>224</sup>
30.7	51.035 <sup>285</sup>	55.82 <sup>219</sup>	52.501 <sup>430</sup>	27.40 <sup>269</sup>	18.694 <sup>299</sup>	56.69 <sup>232</sup>
Feb. 9.6	51.286 <sup>251</sup>	57.93 <sup>211</sup>	52.879 <sup>378</sup>	30.38 <sup>298</sup>	18.955 <sup>261</sup>	59.00 <sup>231</sup>
19.6	51.501 <sup>215</sup>	59.93 <sup>200</sup>	53.198 <sup>319</sup>	33.55 <sup>317</sup>	19.181 <sup>226</sup>	61.24 <sup>224</sup>
Mar. 1.6	51.674 <sup>173</sup>	61.74 <sup>181</sup>	53.455 <sup>257</sup>	36.83 <sup>328</sup>	19.361 <sup>180</sup>	63.36 <sup>212</sup>
11.6	51.807 <sup>133</sup>	63.34 <sup>160</sup>	53.648 <sup>193</sup>	40.15 <sup>332</sup>	19.503 <sup>142</sup>	65.33 <sup>197</sup>
21.5	51.897 <sup>90</sup>	64.72 <sup>138</sup>	53.778 <sup>130</sup>	43.43 <sup>328</sup>	19.604 <sup>101</sup>	67.09 <sup>176</sup>
31.5	51.954 <sup>57</sup>	65.90 <sup>118</sup>	53.846 <sup>68</sup>	46.60 <sup>317</sup>	19.663 <sup>59</sup>	68.65 <sup>156</sup>
Apr. 10.5	51.974 <sup>20</sup>	66.82 <sup>92</sup>	53.858 <sup>12</sup>	49.61 <sup>301</sup>	19.691 <sup>28</sup>	69.97 <sup>132</sup>
20.4	51.966 <sup>8</sup>	67.51 <sup>69</sup>	53.816 <sup>42</sup>	52.39 <sup>278</sup>	19.685 <sup>6</sup>	71.08 <sup>111</sup>
30.4	51.931 <sup>35</sup>	68.00 <sup>49</sup>	53.725 <sup>91</sup>	54.89 <sup>250</sup>	19.655 <sup>30</sup>	71.94 <sup>86</sup>
May 10.4	51.876 <sup>55</sup>	68.27 <sup>27</sup>	53.591 <sup>134</sup>	57.07 <sup>218</sup>	19.598 <sup>57</sup>	72.56 <sup>62</sup>
20.4	51.800 <sup>76</sup>	68.34 <sup>7</sup>	53.419 <sup>172</sup>	58.89 <sup>182</sup>	19.523 <sup>75</sup>	72.94 <sup>38</sup>
30.3	51.709 <sup>91</sup>	68.25 <sup>9</sup>	53.212 <sup>207</sup>	60.31 <sup>142</sup>	19.430 <sup>93</sup>	73.10 <sup>16</sup>
June 9.3	51.609 <sup>100</sup>	67.96 <sup>29</sup>	52.978 <sup>234</sup>	61.30 <sup>99</sup>	19.322 <sup>108</sup>	73.04 <sup>6</sup>
19.3	51.497 <sup>112</sup>	67.49 <sup>47</sup>	52.721 <sup>257</sup>	61.85 <sup>55</sup>	19.206 <sup>116</sup>	72.74 <sup>30</sup>
29.2	51.381 <sup>116</sup>	66.90 <sup>59</sup>	52.449 <sup>272</sup>	61.94 <sup>9</sup>	19.080 <sup>126</sup>	72.23 <sup>51</sup>
July 9.2	51.261 <sup>120</sup>	66.16 <sup>74</sup>	52.169 <sup>280</sup>	61.57 <sup>37</sup>	18.951 <sup>129</sup>	71.54 <sup>69</sup>
19.2	51.138 <sup>123</sup>	65.30 <sup>86</sup>	51.889 <sup>280</sup>	60.74 <sup>83</sup>	18.821 <sup>130</sup>	70.65 <sup>89</sup>
29.2	51.023 <sup>115</sup>	64.35 <sup>95</sup>	51.617 <sup>272</sup>	59.49 <sup>125</sup>	18.694 <sup>127</sup>	69.59 <sup>106</sup>
Aug. 8.1	50.917 <sup>106</sup>	63.35 <sup>100</sup>	51.365 <sup>252</sup>	57.85 <sup>164</sup>	18.576 <sup>118</sup>	68.44 <sup>115</sup>
18.1	50.824 <sup>93</sup>	62.31 <sup>104</sup>	51.141 <sup>224</sup>	55.86 <sup>199</sup>	18.472 <sup>104</sup>	67.19 <sup>125</sup>
28.1	50.748 <sup>76</sup>	61.31 <sup>100</sup>	50.956 <sup>185</sup>	53.60 <sup>226</sup>	18.386 <sup>86</sup>	65.91 <sup>128</sup>
Sept. 7.1	50.700 <sup>48</sup>	60.35 <sup>96</sup>	50.821 <sup>135</sup>	51.14 <sup>246</sup>	18.331 <sup>55</sup>	64.64 <sup>127</sup>
17.0	50.679 <sup>21</sup>	59.54 <sup>81</sup>	50.745 <sup>76</sup>	48.56 <sup>258</sup>	18.302 <sup>29</sup>	63.44 <sup>120</sup>
27.0	50.695 <sup>16</sup>	58.84 <sup>70</sup>	50.737 <sup>8</sup>	45.97 <sup>259</sup>	18.311 <sup>9</sup>	62.38 <sup>106</sup>
Oct. 7.0	50.751 <sup>56</sup>	58.40 <sup>44</sup>	50.803 <sup>66</sup>	43.48 <sup>249</sup>	18.364 <sup>53</sup>	61.52 <sup>86</sup>
16.9	50.852 <sup>101</sup>	58.19 <sup>21</sup>	50.946 <sup>143</sup>	41.19 <sup>229</sup>	18.464 <sup>100</sup>	60.91 <sup>61</sup>
26.9	50.995 <sup>143</sup>	58.30 <sup>11</sup>	51.167 <sup>221</sup>	39.19 <sup>200</sup>	18.609 <sup>145</sup>	60.59 <sup>32</sup>
Nov. 5.9	51.187 <sup>192</sup>	58.75 <sup>45</sup>	51.464 <sup>297</sup>	37.58 <sup>161</sup>	18.803 <sup>194</sup>	60.64 <sup>5</sup>
15.9	51.421 <sup>234</sup>	59.52 <sup>77</sup>	51.828 <sup>364</sup>	36.43 <sup>115</sup>	19.042 <sup>239</sup>	61.05 <sup>41</sup>
25.8	51.687 <sup>266</sup>	60.64 <sup>112</sup>	52.251 <sup>423</sup>	35.81 <sup>62</sup>	19.319 <sup>277</sup>	61.86 <sup>81</sup>
Dec. 5.8	51.988 <sup>301</sup>	62.07 <sup>143</sup>	52.719 <sup>468</sup>	35.76 <sup>5</sup>	19.627 <sup>308</sup>	63.00 <sup>114</sup>
15.8	52.310 <sup>322</sup>	63.76 <sup>169</sup>	53.217 <sup>498</sup>	36.27 <sup>51</sup>	19.960 <sup>333</sup>	64.50 <sup>150</sup>
25.8	52.643 <sup>333</sup>	65.67 <sup>191</sup>	53.727 <sup>510</sup>	37.34 <sup>107</sup>	20.302 <sup>342</sup>	66.28 <sup>178</sup>
35.7	52.975 <sup>332</sup>	67.78 <sup>211</sup>	54.234 <sup>507</sup>	38.94 <sup>160</sup>	20.647 <sup>345</sup>	68.32 <sup>204</sup>
Mean Place	49.574	52.82	49.722	36.01	17.136	56.07
Sec $\delta$ , Tan $\delta$	1.041	-0.288	1.820	-1.521	1.086	-0.424
L $\alpha$ , L $\delta$	0.00	-0.4	0.00	-0.4	0.00	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.02	-0.1	-0.10	-0.1	-0.03	-0.1
AUTHORITY	A. E.		A. N.		A. E.	

356 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Muscæ. Mag. 2·9		$\gamma$ Centauri. Mag. 2·4		$\gamma$ Virginis (mean). Mag. 2·9								
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.							
	<sup>h</sup> 12	<sup>m</sup> 32	<sup>h</sup> 12	<sup>m</sup> 37	<sup>h</sup> 12	<sup>m</sup> 37							
	<sup>s</sup> 68	<sup>s</sup> 42	<sup>s</sup> 48	<sup>s</sup> 31	<sup>s</sup> 12	<sup>s</sup> 1							
Jan.	0·7	32·82	71	3·51	161	13·448	437	40·00	191	42·704	320	20·06	205
	10·7	33·53	67	5·12	213	13·885	413	41·91	225	43·024	307	22·11	194
	20·7	34·20	62	7·25	257	14·298	381	44·16	257	43·331	284	24·05	177
	30·7	34·82	54	9·82	294	14·679	339	46·73	281	43·615	254	25·82	156
Feb.	9·6	35·36	46	12·76	323	15·018	290	49·54	294	43·869	218	27·38	130
	19·6	35·82	38	15·99	344	15·308	239	52·48	303	44·087	180	28·68	102
Mar.	1·6	36·20	28	19·43	354	15·547	185	55·51	302	44·267	141	29·70	75
	11·6	36·48	19	22·97	357	15·732	132	58·53	297	44·408	101	30·45	48
	21·5	36·67	10	26·54	354	15·864	81	61·50	283	44·509	64	30·93	22
	31·5	36·77	1	30·08	339	15·945	34	64·33	268	44·573	32	31·15	1
Apr.	10·5	36·78	8	33·47	322	15·979	11	67·01	244	44·605	1	31·16	19
	20·4	36·70	15	36·69	297	15·968	52	69·45	219	44·606	25	30·97	35
	30·4	36·55	22	39·66	266	15·916	89	71·64	187	44·581	47	30·62	48
May	10·4	36·33	29	42·32	228	15·827	120	73·51	157	44·534	65	30·14	57
	20·4	36·04	34	44·60	186	15·707	149	75·08	119	44·469	81	29·57	63
	30·3	35·70	39	46·46	143	15·558	172	76·27	81	44·388	93	28·94	69
June	9·3	35·31	43	47·89	93	15·386	192	77·08	42	44·295	102	28·25	71
	19·3	34·88	46	48·82	42	15·194	206	77·50	0	44·193	109	27·54	71
	29·3	34·42	47	49·24	10	14·988	216	77·50	40	44·084	113	26·83	69
July	9·2	33·95	47	49·14	62	14·772	218	77·10	79	43·971	114	26·14	66
	19·2	33·48	47	48·52	110	14·554	216	76·31	117	43·857	111	25·48	62
	29·2	33·01	43	47·42	158	14·338	202	75·14	149	43·746	105	24·86	54
Aug.	8·1	32·58	38	45·84	201	14·136	183	73·65	181	43·641	94	24·32	44
	18·1	32·20	32	43·83	236	13·953	152	71·84	203	43·547	77	23·88	32
	28·1	31·88	25	41·47	264	13·801	116	69·81	222	43·470	56	23·56	17
Sept.	7·1	31·63	15	38·83	282	13·685	68	67·59	229	43·414	29	23·39	0
	17·0	31·48	5	36·01	291	13·617	13	65·30	228	43·385	3	23·39	21
	27·0	31·43	6	33·10	287	13·604	46	63·02	217	43·388	41	23·60	45
Oct.	7·0	31·49	18	30·23	274	13·650	113	60·85	198	43·429	82	24·05	70
	17·0	31·67	29	27·49	248	13·763	177	58·87	171	43·511	125	24·75	96
	26·9	31·96	41	25·01	210	13·940	242	57·16	133	43·636	170	25·71	123
Nov.	5·9	32·37	50	22·91	167	14·182	301	55·83	87	43·806	213	26·94	149
	15·9	32·87	59	21·24	114	14·483	355	54·96	39	44·019	250	28·43	171
	25·8	33·46	66	20·10	54	14·838	394	54·57	12	44·269	283	30·14	189
Dec.	5·8	34·12	70	19·56	6	15·232	426	54·69	64	44·552	306	32·03	203
	15·8	34·82	72	19·62	69	15·658	440	55·33	116	44·858	320	34·06	209
	25·8	35·54	72	20·31	127	16·098	439	56·49	161	45·178	323	36·15	210
	35·7	36·26	72	21·58	127	16·537	439	58·10	161	45·501	323	38·25	210
Mean Place	30·80	21·55		12·435	54·10		42·413	18·74					
Sec $\delta$ , Tan $\delta$	2·753	—2·565		1·510	—1·131		1·000	—0·018					
L $\alpha$ , L $\delta$	+0·01	—0·4		0·00	—0·4		0·00	—0·4					
$\omega$ $\alpha$ , $\omega$ $\delta$	—0·17	—0·1		—0·07	—0·2		0·00	—0·2					
AUTHORITY	A. E.		A. E.		A. N.								

# APPARENT PLACES OF STARS, 1922. 357

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\rho$ Virginis. Mag. 5.0		$\beta$ Muscæ. Mag. 3.3		$\beta$ Crucis. Mag. 1.5	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 12 <sup>m</sup> 37	<sup>°</sup> 10 <sup>'</sup> 39	<sup>h</sup> 12 <sup>m</sup> 41	<sup>°</sup> 67 <sup>'</sup> 40	<sup>h</sup> 12 <sup>m</sup> 43	<sup>°</sup> 59 <sup>'</sup> 15
Jan.	0.7 56.391 <sup>323</sup>	49.07 <sup>195</sup>	30.62 <sup>69</sup>	34.85 <sup>151</sup>	10.376 <sup>539</sup>	28.97 <sup>164</sup>
	10.7 56.714 <sup>312</sup>	47.12 <sup>171</sup>	31.31 <sup>66</sup>	36.36 <sup>203</sup>	10.915 <sup>513</sup>	30.61 <sup>212</sup>
	20.7 57.026 <sup>290</sup>	45.41 <sup>143</sup>	31.97 <sup>60</sup>	38.39 <sup>247</sup>	11.428 <sup>474</sup>	32.73 <sup>250</sup>
	30.7 57.316 <sup>260</sup>	43.98 <sup>111</sup>	32.57 <sup>54</sup>	40.86 <sup>285</sup>	11.902 <sup>427</sup>	35.23 <sup>284</sup>
Feb.	9.6 57.576 <sup>224</sup>	42.87 <sup>75</sup>	33.11 <sup>47</sup>	43.71 <sup>315</sup>	12.329 <sup>366</sup>	38.07 <sup>306</sup>
	19.6 57.800 <sup>185</sup>	42.12 <sup>42</sup>	33.58 <sup>38</sup>	46.86 <sup>335</sup>	12.695 <sup>301</sup>	41.13 <sup>323</sup>
Mar.	1.6 57.985 <sup>143</sup>	41.70 <sup>8</sup>	33.96 <sup>30</sup>	50.21 <sup>347</sup>	12.996 <sup>238</sup>	44.36 <sup>330</sup>
	11.6 58.128 <sup>104</sup>	41.62 <sup>22</sup>	34.26 <sup>21</sup>	53.68 <sup>352</sup>	13.234 <sup>170</sup>	47.66 <sup>331</sup>
	21.5 58.232 <sup>65</sup>	41.84 <sup>48</sup>	34.47 <sup>12</sup>	57.20 <sup>349</sup>	13.404 <sup>106</sup>	50.97 <sup>323</sup>
	31.5 58.297 <sup>29</sup>	42.32 <sup>70</sup>	34.59 <sup>4</sup>	60.69 <sup>338</sup>	13.510 <sup>43</sup>	54.20 <sup>312</sup>
Apr.	10.5 58.326 <sup>1</sup>	43.02 <sup>85</sup>	34.63 <sup>5</sup>	64.07 <sup>320</sup>	13.553 <sup>15</sup>	57.32 <sup>292</sup>
	20.4 58.325 <sup>28</sup>	43.87 <sup>96</sup>	34.58 <sup>11</sup>	67.27 <sup>297</sup>	13.538 <sup>71</sup>	60.24 <sup>267</sup>
	30.4 58.297 <sup>52</sup>	44.83 <sup>102</sup>	34.47 <sup>19</sup>	70.24 <sup>267</sup>	13.467 <sup>120</sup>	62.91 <sup>236</sup>
May	10.4 58.245 <sup>70</sup>	45.85 <sup>104</sup>	34.28 <sup>25</sup>	72.91 <sup>232</sup>	13.347 <sup>165</sup>	65.27 <sup>202</sup>
	20.4 58.175 <sup>86</sup>	46.89 <sup>101</sup>	34.03 <sup>31</sup>	75.23 <sup>192</sup>	13.182 <sup>207</sup>	67.29 <sup>165</sup>
	30.3 58.089 <sup>97</sup>	47.90 <sup>96</sup>	33.72 <sup>36</sup>	77.15 <sup>147</sup>	12.975 <sup>242</sup>	68.94 <sup>124</sup>
June	9.3 57.992 <sup>107</sup>	48.86 <sup>87</sup>	33.36 <sup>39</sup>	78.62 <sup>101</sup>	12.733 <sup>269</sup>	70.18 <sup>77</sup>
	19.3 57.885 <sup>113</sup>	49.73 <sup>76</sup>	32.97 <sup>43</sup>	79.63 <sup>50</sup>	12.464 <sup>293</sup>	70.95 <sup>32</sup>
	29.3 57.772 <sup>116</sup>	50.49 <sup>63</sup>	32.54 <sup>44</sup>	80.13 <sup>0</sup>	12.171 <sup>304</sup>	71.27 <sup>15</sup>
July	9.2 57.656 <sup>116</sup>	51.12 <sup>49</sup>	32.10 <sup>45</sup>	80.13 <sup>51</sup>	11.867 <sup>311</sup>	71.12 <sup>62</sup>
	19.2 57.540 <sup>113</sup>	51.61 <sup>32</sup>	31.65 <sup>45</sup>	79.62 <sup>102</sup>	11.556 <sup>308</sup>	70.50 <sup>106</sup>
	29.2 57.427 <sup>105</sup>	51.93 <sup>16</sup>	31.20 <sup>41</sup>	78.60 <sup>148</sup>	11.248 <sup>291</sup>	69.44 <sup>148</sup>
Aug.	8.1 57.322 <sup>94</sup>	52.09 <sup>4</sup>	30.79 <sup>38</sup>	77.12 <sup>191</sup>	10.957 <sup>264</sup>	67.96 <sup>187</sup>
	18.1 57.228 <sup>79</sup>	52.05 <sup>23</sup>	30.41 <sup>32</sup>	75.21 <sup>228</sup>	10.693 <sup>223</sup>	66.09 <sup>219</sup>
	28.1 57.149 <sup>55</sup>	51.82 <sup>45</sup>	30.09 <sup>25</sup>	72.93 <sup>256</sup>	10.470 <sup>175</sup>	63.90 <sup>242</sup>
Sept.	7.1 57.094 <sup>30</sup>	51.37 <sup>67</sup>	29.84 <sup>17</sup>	70.37 <sup>276</sup>	10.295 <sup>111</sup>	61.48 <sup>257</sup>
	17.0 57.064 <sup>3</sup>	50.70 <sup>91</sup>	29.67 <sup>7</sup>	67.61 <sup>287</sup>	10.184 <sup>43</sup>	58.91 <sup>264</sup>
	27.0 57.067 <sup>40</sup>	49.79 <sup>116</sup>	29.60 <sup>4</sup>	64.74 <sup>285</sup>	10.141 <sup>38</sup>	56.27 <sup>260</sup>
Oct.	7.0 57.107 <sup>82</sup>	48.63 <sup>139</sup>	29.64 <sup>15</sup>	61.89 <sup>272</sup>	10.179 <sup>119</sup>	53.67 <sup>244</sup>
	17.0 57.189 <sup>125</sup>	47.24 <sup>163</sup>	29.79 <sup>27</sup>	59.17 <sup>249</sup>	10.298 <sup>208</sup>	51.23 <sup>218</sup>
	26.9 57.314 <sup>169</sup>	45.61 <sup>185</sup>	30.06 <sup>37</sup>	56.68 <sup>215</sup>	10.506 <sup>287</sup>	49.05 <sup>184</sup>
Nov.	5.9 57.483 <sup>211</sup>	43.76 <sup>202</sup>	30.43 <sup>47</sup>	54.53 <sup>170</sup>	10.793 <sup>365</sup>	47.21 <sup>141</sup>
	15.9 57.694 <sup>251</sup>	41.74 <sup>217</sup>	30.90 <sup>55</sup>	52.83 <sup>120</sup>	11.158 <sup>432</sup>	45.80 <sup>90</sup>
	25.8 57.945 <sup>284</sup>	39.57 <sup>224</sup>	31.45 <sup>63</sup>	51.63 <sup>62</sup>	11.590 <sup>484</sup>	44.90 <sup>34</sup>
Dec.	5.8 58.229 <sup>308</sup>	37.33 <sup>226</sup>	32.08 <sup>67</sup>	51.01 <sup>3</sup>	12.074 <sup>522</sup>	44.56 <sup>22</sup>
	15.8 58.537 <sup>324</sup>	35.07 <sup>220</sup>	32.75 <sup>69</sup>	50.98 <sup>58</sup>	12.596 <sup>540</sup>	44.78 <sup>81</sup>
	25.8 58.861 <sup>328</sup>	32.87 <sup>207</sup>	33.44 <sup>70</sup>	51.56 <sup>117</sup>	13.136 <sup>542</sup>	45.59 <sup>132</sup>
	35.7 59.189	30.80	34.14	52.73	13.678	46.91
Mean Place	56.234	54.49	28.825	53.08	9.073	45.77
Sec $\delta$ , Tan $\delta$	1.018	+0.188	2.633	-2.436	1.956	-1.682
L $\alpha$ , L $\delta$	0.00	-0.4	+0.01	-0.4	+0.01	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.01	-0.2	-0.16	-0.2	-0.11	-0.2
AUTHORITY			A. N.		A. E.	

# 358 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	35 Virginis. Mag. 6.7		31 Comæ. Mag. 5.1		ψ Virginis. Mag. 4.9	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 12 <sup>m</sup> 43 <sup>s</sup>	<sup>°</sup> 3 <sup>'</sup> 59	<sup>h</sup> 12 <sup>m</sup> 47 <sup>s</sup>	<sup>°</sup> 27 <sup>'</sup> 57	<sup>h</sup> 12 <sup>m</sup> 50 <sup>s</sup>	<sup>°</sup> 9 <sup>'</sup> 6
Jan. 0.8	53.301 <sup>322</sup>	51.44 <sup>202</sup>	53.889 <sup>349</sup>	42.70 <sup>176</sup>	17.961 <sup>326</sup>	54.29 <sup>206</sup>
10.7	53.623 <sup>310</sup>	49.42 <sup>186</sup>	54.238 <sup>340</sup>	40.94 <sup>136</sup>	18.287 <sup>314</sup>	56.35 <sup>205</sup>
20.7	53.933 <sup>289</sup>	47.56 <sup>163</sup>	54.578 <sup>319</sup>	39.58 <sup>91</sup>	18.601 <sup>293</sup>	58.40 <sup>197</sup>
30.7	54.222 <sup>260</sup>	45.93 <sup>138</sup>	54.897 <sup>289</sup>	38.67 <sup>45</sup>	18.894 <sup>265</sup>	60.37 <sup>183</sup>
Feb. 9.6	54.482 <sup>225</sup>	44.55 <sup>107</sup>	55.186 <sup>251</sup>	38.22 <sup>2</sup>	19.159 <sup>230</sup>	62.20 <sup>164</sup>
19.6	54.707 <sup>187</sup>	43.48 <sup>77</sup>	55.437 <sup>210</sup>	38.24 <sup>46</sup>	19.389 <sup>193</sup>	63.84 <sup>142</sup>
Mar. 1.6	54.894 <sup>148</sup>	42.71 <sup>46</sup>	55.647 <sup>164</sup>	38.70 <sup>85</sup>	19.582 <sup>155</sup>	65.26 <sup>119</sup>
11.6	55.042 <sup>108</sup>	42.25 <sup>18</sup>	55.811 <sup>119</sup>	39.55 <sup>119</sup>	19.737 <sup>116</sup>	66.45 <sup>96</sup>
21.5	55.150 <sup>72</sup>	42.07 <sup>8</sup>	55.930 <sup>76</sup>	40.74 <sup>147</sup>	19.853 <sup>80</sup>	67.41 <sup>71</sup>
31.5	55.222 <sup>36</sup>	42.15 <sup>31</sup>	56.006 <sup>34</sup>	42.21 <sup>165</sup>	19.933 <sup>46</sup>	68.12 <sup>49</sup>
Apr. 10.5	55.258 <sup>7</sup>	42.46 <sup>49</sup>	56.040 <sup>2</sup>	43.86 <sup>177</sup>	19.979 <sup>16</sup>	68.61 <sup>28</sup>
20.5	55.265 <sup>20</sup>	42.95 <sup>63</sup>	56.038 <sup>36</sup>	45.63 <sup>180</sup>	19.995 <sup>11</sup>	68.89 <sup>9</sup>
30.4	55.245 <sup>43</sup>	43.58 <sup>72</sup>	56.002 <sup>62</sup>	47.43 <sup>177</sup>	19.984 <sup>34</sup>	68.98 <sup>7</sup>
May 10.4	55.202 <sup>61</sup>	44.30 <sup>79</sup>	55.940 <sup>86</sup>	49.20 <sup>166</sup>	19.950 <sup>54</sup>	68.91 <sup>22</sup>
20.4	55.141 <sup>78</sup>	45.09 <sup>82</sup>	55.854 <sup>105</sup>	50.86 <sup>151</sup>	19.896 <sup>72</sup>	68.69 <sup>34</sup>
30.3	55.063 <sup>91</sup>	45.91 <sup>82</sup>	55.749 <sup>120</sup>	52.37 <sup>131</sup>	19.824 <sup>86</sup>	68.35 <sup>45</sup>
June 9.3	54.972 <sup>101</sup>	46.73 <sup>79</sup>	55.629 <sup>131</sup>	53.68 <sup>106</sup>	19.738 <sup>99</sup>	67.90 <sup>55</sup>
19.3	54.871 <sup>109</sup>	47.52 <sup>75</sup>	55.498 <sup>139</sup>	54.74 <sup>81</sup>	19.639 <sup>108</sup>	67.35 <sup>62</sup>
29.3	54.762 <sup>113</sup>	48.27 <sup>69</sup>	55.359 <sup>142</sup>	55.55 <sup>51</sup>	19.531 <sup>114</sup>	66.73 <sup>68</sup>
July 9.2	54.649 <sup>115</sup>	48.96 <sup>59</sup>	55.217 <sup>142</sup>	56.06 <sup>21</sup>	19.417 <sup>118</sup>	66.05 <sup>72</sup>
19.2	54.534 <sup>112</sup>	49.55 <sup>51</sup>	55.075 <sup>140</sup>	56.27 <sup>9</sup>	19.299 <sup>118</sup>	65.33 <sup>75</sup>
29.2	54.422 <sup>107</sup>	50.06 <sup>37</sup>	54.935 <sup>130</sup>	56.18 <sup>40</sup>	19.181 <sup>113</sup>	64.58 <sup>75</sup>
Aug. 8.2	54.315 <sup>96</sup>	50.43 <sup>25</sup>	54.805 <sup>118</sup>	55.78 <sup>71</sup>	19.068 <sup>103</sup>	63.83 <sup>72</sup>
18.1	54.219 <sup>82</sup>	50.68 <sup>9</sup>	54.687 <sup>101</sup>	55.07 <sup>101</sup>	18.965 <sup>89</sup>	63.11 <sup>67</sup>
28.1	54.137 <sup>60</sup>	50.77 <sup>9</sup>	54.586 <sup>78</sup>	54.06 <sup>131</sup>	18.876 <sup>68</sup>	62.44 <sup>57</sup>
Sept. 7.1	54.077 <sup>34</sup>	50.68 <sup>29</sup>	54.508 <sup>49</sup>	52.75 <sup>160</sup>	18.808 <sup>41</sup>	61.87 <sup>43</sup>
17.0	54.043 <sup>3</sup>	50.39 <sup>51</sup>	54.459 <sup>15</sup>	51.15 <sup>187</sup>	18.767 <sup>8</sup>	61.44 <sup>27</sup>
27.0	54.040 <sup>35</sup>	49.88 <sup>75</sup>	54.444 <sup>25</sup>	49.28 <sup>212</sup>	18.759 <sup>30</sup>	61.17 <sup>5</sup>
Oct. 7.0	54.075 <sup>76</sup>	49.13 <sup>100</sup>	54.469 <sup>69</sup>	47.16 <sup>233</sup>	18.789 <sup>72</sup>	61.12 <sup>20</sup>
17.0	54.151 <sup>120</sup>	48.13 <sup>125</sup>	54.538 <sup>116</sup>	44.83 <sup>251</sup>	18.861 <sup>118</sup>	61.32 <sup>46</sup>
26.9	54.271 <sup>163</sup>	46.88 <sup>150</sup>	54.654 <sup>163</sup>	42.32 <sup>266</sup>	18.979 <sup>163</sup>	61.78 <sup>76</sup>
Nov. 5.9	54.434 <sup>207</sup>	45.38 <sup>171</sup>	54.817 <sup>211</sup>	39.66 <sup>273</sup>	19.142 <sup>207</sup>	62.54 <sup>105</sup>
15.9	54.641 <sup>246</sup>	43.67 <sup>191</sup>	55.028 <sup>255</sup>	36.93 <sup>274</sup>	19.349 <sup>248</sup>	63.59 <sup>134</sup>
25.9	54.887 <sup>280</sup>	41.76 <sup>205</sup>	55.283 <sup>292</sup>	34.19 <sup>267</sup>	19.597 <sup>281</sup>	64.93 <sup>158</sup>
Dec. 5.8	55.167 <sup>304</sup>	39.71 <sup>214</sup>	55.575 <sup>323</sup>	31.52 <sup>252</sup>	19.878 <sup>307</sup>	66.51 <sup>180</sup>
15.8	55.471 <sup>320</sup>	37.57 <sup>214</sup>	55.898 <sup>343</sup>	29.00 <sup>230</sup>	20.185 <sup>323</sup>	68.31 <sup>196</sup>
25.8	55.791 <sup>324</sup>	35.43 <sup>210</sup>	56.241 <sup>351</sup>	26.70 <sup>199</sup>	20.508 <sup>328</sup>	70.27 <sup>204</sup>
35.7	56.115	33.33	56.592	24.71	20.836	72.31
Mean Place	53.104	54.27	54.024	53.34	17.654	56.40
Sec δ, Tan δ	1.002	+0.070	1.132	+0.531	1.013	-0.160
L α, L δ	0.00	-0.4	0.00	-0.4	0.00	-0.4
ω α, ω δ	+0.01	-0.2	+0.03	-0.2	-0.01	-0.2

AUTHORITY

APPARENT PLACES OF STARS, 1922. 359

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Ursæ Majoris. Mag. 1·7		δ Virginis. Mag. 3·7		12 Canum Venat. Mag. 2·9	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 12 50	<sup>m</sup> 56 22	<sup>h</sup> 12 51	<sup>m</sup> 3 48	<sup>h</sup> 12 52	<sup>m</sup> 38 43
Jan. 0·8	35·333 <sup>s</sup> <sub>497</sub>	41·14 <sup>s</sup> <sub>125</sub>	40·565 <sup>s</sup> <sub>321</sub>	73·37 <sup>s</sup> <sub>204</sub>	22·551 <sup>s</sup> <sub>382</sub>	68·11 <sup>s</sup> <sub>161</sub>
10·7	35·830 <sub>487</sub>	39·89 <sub>62</sub>	40·886 <sub>312</sub>	71·33 <sub>186</sub>	22·933 <sub>371</sub>	66·50 <sub>111</sub>
20·7	36·317 <sub>462</sub>	39·27 <sub>3</sub>	41·198 <sub>291</sub>	69·47 <sub>166</sub>	23·304 <sub>351</sub>	65·39 <sub>58</sub>
30·7	36·779 <sub>423</sub>	39·24 <sub>62</sub>	41·489 <sub>264</sub>	67·81 <sub>138</sub>	23·655 <sub>321</sub>	64·81 <sub>6</sub>
Feb. 9·6	37·202 <sub>369</sub>	39·86 <sub>117</sub>	41·753 <sub>231</sub>	66·43 <sub>110</sub>	23·976 <sub>282</sub>	64·75 <sub>45</sub>
19·6	37·571 <sub>306</sub>	41·03 <sub>167</sub>	41·984 <sub>191</sub>	65·33 <sub>79</sub>	24·258 <sub>234</sub>	65·20 <sub>96</sub>
Mar. 1·6	37·877 <sub>238</sub>	42·70 <sub>213</sub>	42·175 <sub>154</sub>	64·54 <sub>47</sub>	24·492 <sub>183</sub>	66·16 <sub>138</sub>
11·6	38·115 <sub>163</sub>	44·83 <sub>245</sub>	42·329 <sub>117</sub>	64·07 <sub>20</sub>	24·675 <sub>135</sub>	67·54 <sub>173</sub>
21·5	38·278 <sub>92</sub>	47·28 <sub>269</sub>	42·446 <sub>78</sub>	63·87 <sub>8</sub>	24·810 <sub>82</sub>	69·27 <sub>200</sub>
31·5	38·370 <sub>22</sub>	49·97 <sub>279</sub>	42·524 <sub>43</sub>	63·95 <sub>29</sub>	24·892 <sub>36</sub>	71·27 <sub>213</sub>
Apr. 10·5	38·392 <sub>41</sub>	52·76 <sub>281</sub>	42·567 <sub>14</sub>	64·24 <sub>49</sub>	24·928 <sub>7</sub>	73·40 <sub>225</sub>
20·5	38·351 <sub>102</sub>	55·57 <sub>270</sub>	42·581 <sub>13</sub>	64·73 <sub>63</sub>	24·921 <sub>48</sub>	75·65 <sub>223</sub>
30·4	38·249 <sub>151</sub>	58·27 <sub>252</sub>	42·568 <sub>38</sub>	65·36 <sub>73</sub>	24·873 <sub>81</sub>	77·88 <sub>215</sub>
May 10·4	38·098 <sub>195</sub>	60·79 <sub>222</sub>	42·530 <sub>57</sub>	66·09 <sub>80</sub>	24·792 <sub>108</sub>	80·03 <sub>199</sub>
20·4	37·903 <sub>232</sub>	63·01 <sub>189</sub>	42·473 <sub>73</sub>	66·89 <sub>83</sub>	24·684 <sub>132</sub>	82·02 <sub>174</sub>
30·3	37·671 <sub>254</sub>	64·90 <sub>148</sub>	42·400 <sub>89</sub>	67·72 <sub>82</sub>	24·552 <sub>152</sub>	83·76 <sub>145</sub>
June 9·3	37·417 <sub>275</sub>	66·38 <sub>105</sub>	42·311 <sub>100</sub>	68·54 <sub>81</sub>	24·400 <sub>163</sub>	85·21 <sub>117</sub>
19·3	37·142 <sub>284</sub>	67·43 <sub>56</sub>	42·211 <sub>108</sub>	69·35 <sub>74</sub>	24·237 <sub>171</sub>	86·38 <sub>76</sub>
29·3	36·858 <sub>288</sub>	67·99 <sub>10</sub>	42·103 <sub>115</sub>	70·09 <sub>71</sub>	24·066 <sub>176</sub>	87·14 <sub>43</sub>
July 9·2	36·570 <sub>283</sub>	68·09 <sub>41</sub>	41·988 <sub>116</sub>	70·80 <sub>60</sub>	23·890 <sub>177</sub>	87·57 <sub>1</sub>
19·2	36·287 <sub>272</sub>	67·68 <sub>87</sub>	41·872 <sub>117</sub>	71·40 <sub>50</sub>	23·713 <sub>170</sub>	87·58 <sub>36</sub>
29·2	36·015 <sub>254</sub>	66·81 <sub>131</sub>	41·755 <sub>112</sub>	71·90 <sub>40</sub>	23·543 <sub>162</sub>	87·22 <sub>72</sub>
Aug. 8·2	35·761 <sub>228</sub>	65·50 <sub>175</sub>	41·643 <sub>102</sub>	72·30 <sub>25</sub>	23·381 <sub>149</sub>	86·50 <sub>112</sub>
18·1	35·533 <sub>197</sub>	63·75 <sub>216</sub>	41·541 <sub>87</sub>	72·55 <sub>10</sub>	23·232 <sub>126</sub>	85·38 <sub>145</sub>
28·1	35·336 <sub>159</sub>	61·59 <sub>251</sub>	41·454 <sub>68</sub>	72·65 <sub>8</sub>	23·106 <sub>100</sub>	83·93 <sub>181</sub>
Sept. 7·1	35·177 <sub>113</sub>	59·08 <sub>284</sub>	41·386 <sub>42</sub>	72·57 <sub>28</sub>	23·006 <sub>66</sub>	82·12 <sub>209</sub>
17·0	35·064 <sub>57</sub>	56·24 <sub>310</sub>	41·344 <sub>10</sub>	72·29 <sub>50</sub>	22·940 <sub>31</sub>	80·03 <sub>241</sub>
27·0	35·007 <sub>1</sub>	53·14 <sub>332</sub>	41·334 <sub>27</sub>	71·79 <sub>75</sub>	22·909 <sub>14</sub>	77·62 <sub>262</sub>
Oct. 7·0	35·006 <sub>68</sub>	49·82 <sub>346</sub>	41·361 <sub>68</sub>	71·04 <sub>98</sub>	22·923 <sub>63</sub>	75·00 <sub>284</sub>
17·0	35·074 <sub>133</sub>	46·36 <sub>352</sub>	41·429 <sub>110</sub>	70·06 <sub>123</sub>	22·986 <sub>115</sub>	72·16 <sub>299</sub>
26·9	35·207 <sub>206</sub>	42·84 <sub>354</sub>	41·539 <sub>156</sub>	68·83 <sub>149</sub>	23·101 <sub>167</sub>	69·17 <sub>306</sub>
Nov. 5·9	35·413 <sub>271</sub>	39·30 <sub>342</sub>	41·695 <sub>200</sub>	67·34 <sub>169</sub>	23·268 <sub>219</sub>	66·11 <sub>308</sub>
15·9	35·684 <sub>341</sub>	35·88 <sub>323</sub>	41·895 <sub>240</sub>	65·65 <sub>189</sub>	23·487 <sub>269</sub>	63·03 <sub>303</sub>
25·9	36·025 <sub>395</sub>	32·65 <sub>296</sub>	42·135 <sub>274</sub>	63·76 <sub>206</sub>	23·756 <sub>309</sub>	60·00 <sub>286</sub>
Dec. 5·8	36·420 <sub>443</sub>	29·69 <sub>259</sub>	42·409 <sub>299</sub>	61·70 <sub>212</sub>	24·065 <sub>347</sub>	57·14 <sub>263</sub>
15·8	36·863 <sub>478</sub>	27·10 <sub>213</sub>	42·708 <sub>316</sub>	59·58 <sub>215</sub>	24·412 <sub>369</sub>	54·51 <sub>229</sub>
25·8	37·341 <sub>494</sub>	24·97 <sub>161</sub>	43·024 <sub>323</sub>	57·43 <sub>212</sub>	24·781 <sub>381</sub>	52·22 <sub>191</sub>
35·7	37·835	23·36	43·347	55·31	25·162	50·31
Mean Place	36·171	58·60	40·413	75·79	22·906	81·60
Sec δ, Tan δ	1·806	+1·504	1·002	+0·067	1·282	+0·802
L α, L δ	-0·01	-0·4	0·00	-0·4	0·00	-0·4
ω α, ω δ	+0·10	-0·2	0·00	-0·2	+0·05	-0·2
AUTHORITY	A. E.		A. E.		A. E.	

# 360 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Virginis. Mag. 3.0		θ Virginis. Mag. 4.4		γ Hydræ. Mag. 3.3	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 12 <sup>m</sup> 58	<sup>°</sup> 11 <sup>'</sup> 22	<sup>h</sup> 13 <sup>m</sup> 5	<sup>°</sup> 5 <sup>'</sup> 7	<sup>h</sup> 13 <sup>m</sup> 14	<sup>°</sup> 22 <sup>'</sup> 45
Jan. 0.8	17.669 <sup>325</sup>	36.24 <sup>198</sup>	54.721 <sup>323</sup>	21.26 <sup>204</sup>	40.934 <sup>345</sup>	29.65 <sup>187</sup>
10.7	17.994 <sup>316</sup>	34.26 <sup>176</sup>	55.044 <sup>315</sup>	23.30 <sup>197</sup>	41.279 <sup>335</sup>	31.52 <sup>204</sup>
20.7	18.310 <sup>298</sup>	32.50 <sup>145</sup>	55.359 <sup>300</sup>	25.27 <sup>185</sup>	41.614 <sup>318</sup>	33.56 <sup>209</sup>
30.7	18.608 <sup>274</sup>	31.05 <sup>113</sup>	55.659 <sup>272</sup>	27.12 <sup>170</sup>	41.932 <sup>294</sup>	35.65 <sup>210</sup>
Feb. 9.6	18.882 <sup>238</sup>	29.92 <sup>76</sup>	55.931 <sup>240</sup>	28.82 <sup>145</sup>	42.226 <sup>261</sup>	37.75 <sup>205</sup>
19.6	19.120 <sup>200</sup>	29.16 <sup>42</sup>	56.171 <sup>206</sup>	30.27 <sup>121</sup>	42.487 <sup>225</sup>	39.80 <sup>196</sup>
Mar. 1.6	19.320 <sup>164</sup>	28.74 <sup>5</sup>	56.377 <sup>167</sup>	31.48 <sup>98</sup>	42.712 <sup>186</sup>	41.76 <sup>182</sup>
11.6	19.484 <sup>122</sup>	28.69 <sup>24</sup>	56.544 <sup>133</sup>	32.46 <sup>70</sup>	42.898 <sup>149</sup>	43.58 <sup>168</sup>
21.5	19.606 <sup>87</sup>	28.93 <sup>52</sup>	56.677 <sup>94</sup>	33.16 <sup>46</sup>	43.047 <sup>112</sup>	45.26 <sup>147</sup>
31.5	19.693 <sup>47</sup>	29.45 <sup>76</sup>	56.771 <sup>62</sup>	33.62 <sup>22</sup>	43.159 <sup>76</sup>	46.73 <sup>129</sup>
Apr. 10.5	19.740 <sup>20</sup>	30.21 <sup>92</sup>	56.833 <sup>31</sup>	33.84 <sup>5</sup>	43.235 <sup>44</sup>	48.02 <sup>110</sup>
20.5	19.760 <sup>12</sup>	31.13 <sup>106</sup>	56.864 <sup>4</sup>	33.89 <sup>15</sup>	43.279 <sup>14</sup>	49.12 <sup>87</sup>
30.4	19.748 <sup>34</sup>	32.19 <sup>111</sup>	56.868 <sup>22</sup>	33.74 <sup>28</sup>	43.293 <sup>11</sup>	49.99 <sup>68</sup>
May 10.4	19.714 <sup>59</sup>	33.30 <sup>114</sup>	56.846 <sup>42</sup>	33.46 <sup>43</sup>	43.282 <sup>38</sup>	50.67 <sup>46</sup>
20.4	19.655 <sup>77</sup>	34.44 <sup>109</sup>	56.804 <sup>61</sup>	33.03 <sup>51</sup>	43.244 <sup>60</sup>	51.13 <sup>29</sup>
30.3	19.578 <sup>89</sup>	35.53 <sup>103</sup>	56.743 <sup>79</sup>	32.52 <sup>55</sup>	43.184 <sup>81</sup>	51.42 <sup>8</sup>
June 9.3	19.489 <sup>103</sup>	36.56 <sup>96</sup>	56.664 <sup>93</sup>	31.97 <sup>64</sup>	43.103 <sup>97</sup>	51.50 <sup>13</sup>
19.3	19.386 <sup>112</sup>	37.52 <sup>82</sup>	56.571 <sup>106</sup>	31.33 <sup>67</sup>	43.006 <sup>112</sup>	51.37 <sup>29</sup>
29.3	19.274 <sup>118</sup>	38.34 <sup>70</sup>	56.465 <sup>113</sup>	30.66 <sup>69</sup>	42.894 <sup>126</sup>	51.08 <sup>50</sup>
July 9.2	19.156 <sup>122</sup>	39.04 <sup>53</sup>	56.352 <sup>117</sup>	29.97 <sup>68</sup>	42.768 <sup>134</sup>	50.58 <sup>64</sup>
19.2	19.034 <sup>122</sup>	39.57 <sup>35</sup>	56.235 <sup>120</sup>	29.29 <sup>65</sup>	42.634 <sup>138</sup>	49.94 <sup>81</sup>
29.2	18.912 <sup>118</sup>	39.92 <sup>21</sup>	56.115 <sup>118</sup>	28.64 <sup>62</sup>	42.496 <sup>137</sup>	49.13 <sup>94</sup>
Aug. 8.2	18.794 <sup>110</sup>	40.13 <sup>3</sup>	55.997 <sup>110</sup>	28.02 <sup>56</sup>	42.359 <sup>130</sup>	48.19 <sup>103</sup>
18.1	18.684 <sup>93</sup>	40.10 <sup>24</sup>	55.887 <sup>100</sup>	27.46 <sup>47</sup>	42.229 <sup>118</sup>	47.16 <sup>110</sup>
28.1	18.591 <sup>76</sup>	39.86 <sup>44</sup>	55.787 <sup>77</sup>	26.99 <sup>38</sup>	42.111 <sup>98</sup>	46.06 <sup>113</sup>
Sept. 7.1	18.515 <sup>49</sup>	39.42 <sup>70</sup>	55.710 <sup>55</sup>	26.61 <sup>21</sup>	42.013 <sup>69</sup>	44.93 <sup>108</sup>
17.0	18.466 <sup>17</sup>	38.72 <sup>95</sup>	55.655 <sup>21</sup>	26.40 <sup>1</sup>	41.944 <sup>35</sup>	43.85 <sup>99</sup>
27.0	18.449 <sup>17</sup>	37.77 <sup>117</sup>	55.634 <sup>13</sup>	26.39 <sup>20</sup>	41.909 <sup>6</sup>	42.86 <sup>84</sup>
Oct. 7.0	18.466 <sup>63</sup>	36.60 <sup>144</sup>	55.647 <sup>57</sup>	26.59 <sup>43</sup>	41.915 <sup>52</sup>	42.02 <sup>66</sup>
17.0	18.529 <sup>103</sup>	35.16 <sup>166</sup>	55.704 <sup>101</sup>	27.02 <sup>69</sup>	41.967 <sup>101</sup>	41.36 <sup>40</sup>
26.9	18.632 <sup>149</sup>	33.50 <sup>186</sup>	55.805 <sup>146</sup>	27.71 <sup>95</sup>	42.068 <sup>150</sup>	40.96 <sup>10</sup>
Nov. 5.9	18.781 <sup>194</sup>	31.64 <sup>208</sup>	55.951 <sup>194</sup>	28.66 <sup>124</sup>	42.218 <sup>201</sup>	40.86 <sup>22</sup>
15.9	18.975 <sup>236</sup>	29.56 <sup>220</sup>	56.145 <sup>232</sup>	29.90 <sup>149</sup>	42.419 <sup>246</sup>	41.08 <sup>57</sup>
25.9	19.211 <sup>268</sup>	27.36 <sup>228</sup>	56.377 <sup>269</sup>	31.39 <sup>167</sup>	42.665 <sup>284</sup>	41.65 <sup>93</sup>
Dec. 5.8	19.479 <sup>298</sup>	25.08 <sup>229</sup>	56.646 <sup>298</sup>	33.06 <sup>187</sup>	42.949 <sup>314</sup>	42.58 <sup>121</sup>
15.8	19.777 <sup>318</sup>	22.79 <sup>225</sup>	56.944 <sup>316</sup>	34.93 <sup>199</sup>	43.263 <sup>336</sup>	43.79 <sup>152</sup>
25.8	20.095 <sup>326</sup>	20.54 <sup>211</sup>	57.260 <sup>323</sup>	36.92 <sup>205</sup>	43.599 <sup>344</sup>	45.31 <sup>176</sup>
35.7	20.421	18.43	57.583	38.97	43.943	47.07
Mean Place	17.646	41.02	54.553	22.59	40.620	37.44
Sec δ, Tan δ	1.020	+0.201	1.004	-0.090	1.084	-0.420
L α, L δ	0.00	-0.4	0.00	-0.4	0.00	-0.4
ω α, ω δ	+0.01	-0.2	-0.01	-0.3	-0.03	-0.3
AUTHORITY	A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 361

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Centauri. Mag. 2.9		$\zeta^1$ Ursæ Majoris. Mag. 2.4		$\alpha$ Virginis. Mag. 1.2		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.	
	<sup>h</sup> 13 <sup>m</sup> 16	<sup>°</sup> 36 <sup>'</sup> 17	<sup>h</sup> 13 <sup>m</sup> 20	<sup>°</sup> 55 <sup>'</sup> 19	<sup>h</sup> 13 <sup>m</sup> 21	<sup>°</sup> 10 <sup>'</sup> 45	
Jan.	0.8 10.7 20.7 30.7	12.749 <sup>382</sup> 13.131 <sup>372</sup> 13.503 <sup>353</sup> 13.856 <sup>323</sup>	52.51 <sup>167</sup> 54.18 <sup>198</sup> 56.16 <sup>216</sup> 58.32 <sup>233</sup>	46.258 <sup>477</sup> 46.735 <sup>479</sup> 47.214 <sup>463</sup> 47.677 <sup>435</sup>	40.73 <sup>161</sup> 39.12 <sup>103</sup> 38.09 <sup>38</sup> 37.71 <sup>24</sup>	5.021 <sup>327</sup> 5.348 <sup>321</sup> 5.669 <sup>305</sup> 5.974 <sup>284</sup>	12.46 <sup>197</sup> 14.43 <sup>198</sup> 16.41 <sup>191</sup> 18.32 <sup>181</sup>
Feb.	9.7 19.6	14.179 <sup>290</sup> 14.469 <sup>250</sup>	60.65 <sup>240</sup> 63.05 <sup>243</sup>	48.112 <sup>391</sup> 48.503 <sup>336</sup>	37.95 <sup>86</sup> 38.81 <sup>139</sup>	6.258 <sup>253</sup> 6.511 <sup>220</sup>	20.13 <sup>166</sup> 21.79 <sup>145</sup>
Mar.	1.6 11.6 21.6 31.5	14.719 <sup>207</sup> 14.926 <sup>166</sup> 15.092 <sup>125</sup> 15.217 <sup>86</sup>	65.48 <sup>240</sup> 67.88 <sup>231</sup> 70.19 <sup>220</sup> 72.39 <sup>203</sup>	48.839 <sup>276</sup> 49.115 <sup>207</sup> 49.322 <sup>142</sup> 49.464 <sup>72</sup>	40.20 <sup>190</sup> 42.10 <sup>230</sup> 44.40 <sup>259</sup> 46.99 <sup>278</sup>	6.731 <sup>182</sup> 6.913 <sup>148</sup> 7.061 <sup>112</sup> 7.173 <sup>80</sup>	23.24 <sup>123</sup> 24.47 <sup>100</sup> 25.47 <sup>77</sup> 26.24 <sup>57</sup>
Apr.	10.5 20.5 30.4	15.303 <sup>47</sup> 15.350 <sup>14</sup> 15.364 <sup>18</sup>	74.42 <sup>186</sup> 76.28 <sup>164</sup> 77.92 <sup>143</sup>	49.536 <sup>8</sup> 49.544 <sup>48</sup> 49.496 <sup>106</sup>	49.77 <sup>286</sup> 52.63 <sup>282</sup> 55.45 <sup>269</sup>	7.253 <sup>46</sup> 7.299 <sup>20</sup> 7.319 <sup>7</sup>	26.81 <sup>36</sup> 27.17 <sup>17</sup> 27.34 <sup>2</sup>
May	10.4 20.4 30.4	15.346 <sup>49</sup> 15.297 <sup>75</sup> 15.222 <sup>101</sup>	79.35 <sup>117</sup> 80.52 <sup>90</sup> 81.42 <sup>62</sup>	49.390 <sup>152</sup> 49.238 <sup>193</sup> 49.045 <sup>226</sup>	58.14 <sup>248</sup> 60.62 <sup>216</sup> 62.78 <sup>180</sup>	7.312 <sup>27</sup> 7.285 <sup>53</sup> 7.232 <sup>70</sup>	27.36 <sup>14</sup> 27.22 <sup>27</sup> 26.95 <sup>37</sup>
June	9.3 19.3 29.3	15.121 <sup>120</sup> 15.001 <sup>141</sup> 14.860 <sup>155</sup>	82.04 <sup>34</sup> 82.38 <sup>4</sup> 82.42 <sup>26</sup>	48.819 <sup>252</sup> 48.567 <sup>269</sup> 48.298 <sup>283</sup>	64.58 <sup>139</sup> 65.97 <sup>92</sup> 66.89 <sup>47</sup>	7.162 <sup>87</sup> 7.075 <sup>101</sup> 6.974 <sup>113</sup>	26.58 <sup>48</sup> 26.10 <sup>52</sup> 25.58 <sup>63</sup>
July	9.3 19.2 29.2	14.705 <sup>165</sup> 14.540 <sup>171</sup> 14.369 <sup>170</sup>	82.16 <sup>54</sup> 81.62 <sup>83</sup> 80.79 <sup>107</sup>	48.015 <sup>286</sup> 47.729 <sup>284</sup> 47.445 <sup>273</sup>	67.36 <sup>2</sup> 67.34 <sup>51</sup> 66.83 <sup>98</sup>	6.861 <sup>121</sup> 6.740 <sup>126</sup> 6.614 <sup>128</sup>	24.95 <sup>67</sup> 24.28 <sup>70</sup> 23.58 <sup>71</sup>
Aug.	8.2 18.1 28.1	14.199 <sup>162</sup> 14.037 <sup>145</sup> 13.892 <sup>122</sup>	79.72 <sup>131</sup> 78.41 <sup>148</sup> 76.93 <sup>159</sup>	47.172 <sup>258</sup> 46.914 <sup>231</sup> 46.683 <sup>200</sup>	65.85 <sup>144</sup> 64.41 <sup>189</sup> 62.52 <sup>224</sup>	6.486 <sup>122</sup> 6.364 <sup>109</sup> 6.255 <sup>93</sup>	22.87 <sup>71</sup> 22.16 <sup>66</sup> 21.50 <sup>61</sup>
Sept.	7.1 17.1 27.0	13.770 <sup>88</sup> 13.682 <sup>48</sup> 13.634 <sup>2</sup>	75.34 <sup>167</sup> 73.67 <sup>167</sup> 72.00 <sup>158</sup>	46.483 <sup>159</sup> 46.324 <sup>111</sup> 46.213 <sup>55</sup>	60.28 <sup>263</sup> 57.65 <sup>294</sup> 54.71 <sup>321</sup>	6.162 <sup>68</sup> 6.094 <sup>39</sup> 6.055 <sup>0</sup>	20.89 <sup>47</sup> 20.42 <sup>35</sup> 20.07 <sup>15</sup>
Oct.	7.0 17.0 27.0	13.632 <sup>53</sup> 13.685 <sup>109</sup> 13.794 <sup>165</sup>	70.42 <sup>142</sup> 69.00 <sup>119</sup> 67.81 <sup>87</sup>	46.158 <sup>9</sup> 46.167 <sup>77</sup> 46.244 <sup>146</sup>	51.50 <sup>342</sup> 48.08 <sup>353</sup> 44.55 <sup>359</sup>	6.055 <sup>44</sup> 6.099 <sup>89</sup> 6.188 <sup>134</sup>	19.92 <sup>8</sup> 20.00 <sup>30</sup> 20.30 <sup>62</sup>
Nov.	5.9 15.9 25.9	13.959 <sup>222</sup> 14.181 <sup>271</sup> 14.452 <sup>315</sup>	66.94 <sup>54</sup> 66.40 <sup>13</sup> 66.27 <sup>28</sup>	46.390 <sup>219</sup> 46.609 <sup>285</sup> 46.894 <sup>348</sup>	40.96 <sup>356</sup> 37.40 <sup>342</sup> 33.98 <sup>320</sup>	6.322 <sup>183</sup> 6.505 <sup>227</sup> 6.732 <sup>262</sup>	20.92 <sup>87</sup> 21.79 <sup>117</sup> 22.96 <sup>140</sup>
Dec.	5.8 15.8 25.8 35.8	14.767 <sup>349</sup> 15.116 <sup>371</sup> 15.487 <sup>381</sup> 15.868	66.55 <sup>72</sup> 67.27 <sup>110</sup> 68.37 <sup>147</sup> 69.84	47.242 <sup>400</sup> 47.642 <sup>443</sup> 48.085 <sup>471</sup> 48.556	30.78 <sup>287</sup> 27.91 <sup>246</sup> 25.45 <sup>195</sup> 23.50	6.994 <sup>293</sup> 7.287 <sup>316</sup> 7.603 <sup>327</sup> 7.930	24.36 <sup>165</sup> 26.01 <sup>182</sup> 27.83 <sup>192</sup> 29.75
Mean Place		12.281 1.241	64.64 -0.735	47.356 1.758	56.45 +1.446	4.878 1.018	16.39 -0.190
Sec $\delta$ , Tan $\delta$							
L $\alpha$ , L $\delta$		+0.01	-0.4	-0.01	-0.4	0.00	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$		-0.05	-0.3	+0.09	-0.3	-0.01	-0.3
AUTHORITY	A. E.		A. E.		A. E.		

# 362 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ι Virginis. Mag. 5.6		ζ Virginis. Mag. 3.4		ε Centauri. Mag. 2.6	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 13 22 <sup>m</sup> s	<sup>°</sup> 12 18 <sup>'</sup> s	<sup>h</sup> 13 30 <sup>m</sup> s	<sup>°</sup> 0 11 <sup>'</sup> s	<sup>h</sup> 13 34 <sup>m</sup> s	<sup>°</sup> 53 3 <sup>'</sup> s
Jan. 0.8	35.884 <sup>330</sup>	3.06 <sup>195</sup>	42.978 <sup>320</sup>	50.46 <sup>201</sup>	56.604 <sup>484</sup>	56.77 <sup>112</sup>
10.8	36.214 <sup>323</sup>	5.01 <sup>197</sup>	43.298 <sup>317</sup>	52.47 <sup>192</sup>	57.088 <sup>478</sup>	57.89 <sup>157</sup>
20.7	36.537 <sup>308</sup>	6.98 <sup>194</sup>	43.615 <sup>306</sup>	54.39 <sup>172</sup>	57.566 <sup>457</sup>	59.46 <sup>195</sup>
30.7	36.845 <sup>284</sup>	8.92 <sup>184</sup>	43.921 <sup>284</sup>	56.11 <sup>155</sup>	58.023 <sup>428</sup>	61.41 <sup>226</sup>
Feb. 9.7	37.129 <sup>255</sup>	10.76 <sup>170</sup>	44.205 <sup>255</sup>	57.66 <sup>126</sup>	58.451 <sup>389</sup>	63.67 <sup>250</sup>
19.7	37.384 <sup>221</sup>	12.46 <sup>151</sup>	44.460 <sup>222</sup>	58.92 <sup>101</sup>	58.840 <sup>342</sup>	66.17 <sup>271</sup>
Mar. 1.6	37.605 <sup>186</sup>	13.97 <sup>131</sup>	44.682 <sup>189</sup>	59.93 <sup>68</sup>	59.182 <sup>291</sup>	68.88 <sup>281</sup>
11.6	37.791 <sup>149</sup>	15.28 <sup>108</sup>	44.871 <sup>154</sup>	60.61 <sup>39</sup>	59.473 <sup>240</sup>	71.69 <sup>286</sup>
21.6	37.940 <sup>114</sup>	16.36 <sup>87</sup>	45.025 <sup>120</sup>	61.00 <sup>15</sup>	59.713 <sup>190</sup>	74.55 <sup>285</sup>
31.5	38.054 <sup>80</sup>	17.23 <sup>65</sup>	45.145 <sup>84</sup>	61.15 <sup>8</sup>	59.903 <sup>136</sup>	77.40 <sup>279</sup>
Apr. 10.5	38.134 <sup>50</sup>	17.88 <sup>44</sup>	45.229 <sup>52</sup>	61.07 <sup>28</sup>	60.039 <sup>85</sup>	80.19 <sup>267</sup>
20.5	38.184 <sup>21</sup>	18.32 <sup>26</sup>	45.281 <sup>26</sup>	60.79 <sup>48</sup>	60.124 <sup>36</sup>	82.86 <sup>251</sup>
30.5	38.205 <sup>4</sup>	18.58 <sup>9</sup>	45.307 <sup>3</sup>	60.31 <sup>58</sup>	60.160 <sup>11</sup>	85.37 <sup>228</sup>
May 10.4	38.201 <sup>29</sup>	18.67 <sup>5</sup>	45.304 <sup>23</sup>	59.73 <sup>68</sup>	60.149 <sup>54</sup>	87.65 <sup>203</sup>
20.4	38.172 <sup>50</sup>	18.62 <sup>20</sup>	45.281 <sup>47</sup>	59.05 <sup>74</sup>	60.095 <sup>98</sup>	89.68 <sup>175</sup>
30.4	38.122 <sup>69</sup>	18.42 <sup>31</sup>	45.234 <sup>63</sup>	58.31 <sup>75</sup>	59.997 <sup>136</sup>	91.43 <sup>141</sup>
June 9.4	38.053 <sup>86</sup>	18.11 <sup>42</sup>	45.171 <sup>85</sup>	57.56 <sup>77</sup>	59.861 <sup>172</sup>	92.84 <sup>106</sup>
19.3	37.967 <sup>102</sup>	17.69 <sup>51</sup>	45.086 <sup>98</sup>	56.79 <sup>76</sup>	59.689 <sup>201</sup>	93.90 <sup>67</sup>
29.3	37.865 <sup>113</sup>	17.18 <sup>59</sup>	44.988 <sup>112</sup>	56.03 <sup>75</sup>	59.488 <sup>230</sup>	94.57 <sup>27</sup>
July 9.3	37.752 <sup>123</sup>	16.59 <sup>66</sup>	44.876 <sup>118</sup>	55.28 <sup>66</sup>	59.258 <sup>246</sup>	94.84 <sup>13</sup>
19.2	37.629 <sup>127</sup>	15.93 <sup>71</sup>	44.758 <sup>126</sup>	54.62 <sup>59</sup>	59.012 <sup>257</sup>	94.71 <sup>55</sup>
29.2	37.502 <sup>129</sup>	15.22 <sup>74</sup>	44.632 <sup>126</sup>	54.03 <sup>51</sup>	58.755 <sup>260</sup>	94.16 <sup>96</sup>
Aug. 8.2	37.373 <sup>123</sup>	14.48 <sup>74</sup>	44.506 <sup>124</sup>	53.52 <sup>40</sup>	58.495 <sup>254</sup>	93.20 <sup>131</sup>
18.2	37.250 <sup>113</sup>	13.74 <sup>72</sup>	44.382 <sup>116</sup>	53.12 <sup>28</sup>	58.241 <sup>230</sup>	91.89 <sup>164</sup>
28.1	37.137 <sup>95</sup>	13.02 <sup>66</sup>	44.266 <sup>96</sup>	52.84 <sup>11</sup>	58.011 <sup>201</sup>	90.25 <sup>192</sup>
Sept. 7.1	37.042 <sup>71</sup>	12.36 <sup>56</sup>	44.170 <sup>75</sup>	52.73 <sup>6</sup>	57.810 <sup>158</sup>	88.33 <sup>213</sup>
17.1	36.971 <sup>40</sup>	11.80 <sup>43</sup>	44.095 <sup>47</sup>	52.79 <sup>23</sup>	57.652 <sup>104</sup>	86.20 <sup>226</sup>
27.1	36.931 <sup>3</sup>	11.37 <sup>25</sup>	44.048 <sup>11</sup>	53.02 <sup>48</sup>	57.548 <sup>43</sup>	83.94 <sup>229</sup>
Oct. 7.0	36.928 <sup>40</sup>	11.12 <sup>3</sup>	44.037 <sup>28</sup>	53.50 <sup>70</sup>	57.505 <sup>29</sup>	81.65 <sup>224</sup>
17.0	36.968 <sup>87</sup>	11.09 <sup>22</sup>	44.065 <sup>75</sup>	54.20 <sup>95</sup>	57.534 <sup>103</sup>	79.41 <sup>208</sup>
27.0	37.055 <sup>134</sup>	11.31 <sup>51</sup>	44.140 <sup>122</sup>	55.15 <sup>121</sup>	57.637 <sup>179</sup>	77.33 <sup>184</sup>
Nov. 5.9	37.189 <sup>182</sup>	11.82 <sup>78</sup>	44.262 <sup>166</sup>	56.36 <sup>147</sup>	57.816 <sup>253</sup>	75.49 <sup>150</sup>
15.9	37.371 <sup>226</sup>	12.60 <sup>108</sup>	44.428 <sup>213</sup>	57.83 <sup>167</sup>	58.069 <sup>323</sup>	73.99 <sup>111</sup>
25.9	37.597 <sup>265</sup>	13.68 <sup>135</sup>	44.641 <sup>247</sup>	59.50 <sup>183</sup>	58.392 <sup>381</sup>	72.88 <sup>63</sup>
Dec. 5.9	37.862 <sup>295</sup>	15.03 <sup>158</sup>	44.888 <sup>283</sup>	61.33 <sup>199</sup>	58.773 <sup>427</sup>	72.25 <sup>15</sup>
15.8	38.157 <sup>317</sup>	16.61 <sup>177</sup>	45.171 <sup>305</sup>	63.32 <sup>204</sup>	59.200 <sup>462</sup>	72.10 <sup>35</sup>
25.8	38.474 <sup>328</sup>	18.38 <sup>191</sup>	45.476 <sup>314</sup>	65.36 <sup>206</sup>	59.662 <sup>479</sup>	72.45 <sup>85</sup>
35.8	38.802	20.29	45.790	67.42	60.141	73.30
Mean Place	35.736	7.58	43.009	51.07	56.043	73.88
Sec δ, Tan δ	1.023	-0.218	1.000	-0.003	1.664	-1.330
L α, L δ	0.00	-0.4	0.00	-0.4	+0.01	-0.4
ω α, ω δ	-0.01	-0.4	0.00	-0.4	-0.08	-0.4
AUTHORITY			A. E.		A. E.	



# APPARENT PLACES OF STARS, 1922. 363

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	m Virginis. Mag. 5.2		τ Boötis. Mag. 4.5		η Ursæ Majoris. Mag. 1.9	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 13 37	<sup>°</sup> 8 18	<sup>h</sup> 13 43	<sup>°</sup> 17 50	<sup>h</sup> 13 44	<sup>°</sup> 49 41
Jan. 0.8	30.946 <sup>325</sup>	32.00 <sup>194</sup>	32.997 <sup>325</sup>	36.88 <sup>211</sup>	27.114 <sup>424</sup>	54.15 <sup>194</sup>
10.8	31.271 <sup>322</sup>	33.94 <sup>192</sup>	33.322 <sup>327</sup>	34.77 <sup>181</sup>	27.538 <sup>428</sup>	52.21 <sup>139</sup>
20.7	31.593 <sup>309</sup>	35.86 <sup>185</sup>	33.649 <sup>315</sup>	32.96 <sup>147</sup>	27.966 <sup>422</sup>	50.82 <sup>79</sup>
30.7	31.902 <sup>289</sup>	37.71 <sup>171</sup>	33.964 <sup>298</sup>	31.49 <sup>108</sup>	28.388 <sup>402</sup>	50.03 <sup>18</sup>
Feb. 9.7	32.191 <sup>261</sup>	39.42 <sup>154</sup>	34.262 <sup>271</sup>	30.41 <sup>64</sup>	28.790 <sup>369</sup>	49.85 <sup>42</sup>
19.7	32.452 <sup>231</sup>	40.96 <sup>131</sup>	34.533 <sup>240</sup>	29.77 <sup>23</sup>	29.159 <sup>325</sup>	50.27 <sup>104</sup>
Mar. 1.6	32.683 <sup>196</sup>	42.27 <sup>109</sup>	34.773 <sup>204</sup>	29.54 <sup>18</sup>	29.484 <sup>275</sup>	51.31 <sup>152</sup>
11.6	32.879 <sup>162</sup>	43.36 <sup>84</sup>	34.977 <sup>169</sup>	29.72 <sup>55</sup>	29.759 <sup>221</sup>	52.83 <sup>199</sup>
21.6	33.041 <sup>128</sup>	44.20 <sup>61</sup>	35.146 <sup>130</sup>	30.27 <sup>92</sup>	29.980 <sup>162</sup>	54.82 <sup>235</sup>
31.5	33.169 <sup>94</sup>	44.81 <sup>39</sup>	35.276 <sup>94</sup>	31.19 <sup>112</sup>	30.142 <sup>104</sup>	57.17 <sup>255</sup>
Apr. 10.5	33.263 <sup>63</sup>	45.20 <sup>18</sup>	35.370 <sup>61</sup>	32.31 <sup>134</sup>	30.246 <sup>52</sup>	59.72 <sup>272</sup>
20.5	33.326 <sup>35</sup>	45.38 <sup>1</sup>	35.431 <sup>27</sup>	33.65 <sup>148</sup>	30.298 <sup>1</sup>	62.44 <sup>277</sup>
30.5	33.361 <sup>9</sup>	45.39 <sup>15</sup>	35.458 <sup>1</sup>	35.13 <sup>156</sup>	30.297 <sup>53</sup>	65.21 <sup>273</sup>
May 10.4	33.370 <sup>16</sup>	45.24 <sup>27</sup>	35.457 <sup>27</sup>	36.69 <sup>155</sup>	30.244 <sup>97</sup>	67.94 <sup>256</sup>
20.4	33.354 <sup>39</sup>	44.97 <sup>38</sup>	35.430 <sup>52</sup>	38.24 <sup>150</sup>	30.147 <sup>134</sup>	70.50 <sup>229</sup>
30.4	33.315 <sup>59</sup>	44.59 <sup>47</sup>	35.378 <sup>73</sup>	39.74 <sup>139</sup>	30.013 <sup>168</sup>	72.79 <sup>200</sup>
June 9.4	33.256 <sup>78</sup>	44.12 <sup>53</sup>	35.305 <sup>94</sup>	41.13 <sup>126</sup>	29.845 <sup>196</sup>	74.79 <sup>166</sup>
19.3	33.178 <sup>95</sup>	43.59 <sup>59</sup>	35.211 <sup>108</sup>	42.39 <sup>110</sup>	29.649 <sup>221</sup>	76.45 <sup>124</sup>
29.3	33.083 <sup>109</sup>	43.00 <sup>61</sup>	35.103 <sup>123</sup>	43.49 <sup>86</sup>	29.428 <sup>233</sup>	77.69 <sup>82</sup>
July 9.3	32.974 <sup>120</sup>	42.39 <sup>65</sup>	34.980 <sup>134</sup>	44.35 <sup>66</sup>	29.195 <sup>247</sup>	78.51 <sup>34</sup>
19.2	32.854 <sup>127</sup>	41.74 <sup>65</sup>	34.846 <sup>140</sup>	45.01 <sup>41</sup>	28.948 <sup>252</sup>	78.85 <sup>12</sup>
29.2	32.727 <sup>131</sup>	41.09 <sup>64</sup>	34.706 <sup>144</sup>	45.42 <sup>17</sup>	28.696 <sup>249</sup>	78.73 <sup>57</sup>
Aug. 8.2	32.596 <sup>127</sup>	40.45 <sup>61</sup>	34.562 <sup>140</sup>	45.59 <sup>11</sup>	28.447 <sup>240</sup>	78.16 <sup>104</sup>
18.2	32.469 <sup>120</sup>	39.84 <sup>55</sup>	34.422 <sup>132</sup>	45.48 <sup>38</sup>	28.207 <sup>223</sup>	77.12 <sup>148</sup>
28.1	32.349 <sup>104</sup>	39.29 <sup>47</sup>	34.290 <sup>118</sup>	45.10 <sup>64</sup>	27.984 <sup>198</sup>	75.64 <sup>189</sup>
Sept. 7.1	32.245 <sup>83</sup>	38.82 <sup>35</sup>	34.172 <sup>94</sup>	44.46 <sup>93</sup>	27.786 <sup>167</sup>	73.75 <sup>228</sup>
17.1	32.162 <sup>53</sup>	38.47 <sup>20</sup>	34.078 <sup>67</sup>	43.53 <sup>120</sup>	27.619 <sup>130</sup>	71.47 <sup>263</sup>
27.1	32.109 <sup>17</sup>	38.27 <sup>2</sup>	34.011 <sup>33</sup>	42.33 <sup>149</sup>	27.489 <sup>77</sup>	68.84 <sup>292</sup>
Oct. 7.0	32.092 <sup>24</sup>	38.25 <sup>20</sup>	33.978 <sup>8</sup>	40.84 <sup>172</sup>	27.412 <sup>26</sup>	65.92 <sup>319</sup>
17.0	32.116 <sup>71</sup>	38.45 <sup>45</sup>	33.986 <sup>55</sup>	39.12 <sup>200</sup>	27.386 <sup>38</sup>	62.73 <sup>338</sup>
27.0	32.187 <sup>117</sup>	38.90 <sup>71</sup>	34.041 <sup>101</sup>	37.12 <sup>218</sup>	27.424 <sup>99</sup>	59.35 <sup>347</sup>
Nov. 5.9	32.304 <sup>166</sup>	39.61 <sup>97</sup>	34.142 <sup>150</sup>	34.94 <sup>238</sup>	27.523 <sup>165</sup>	55.88 <sup>354</sup>
15.9	32.470 <sup>211</sup>	40.58 <sup>124</sup>	34.292 <sup>198</sup>	32.56 <sup>249</sup>	27.688 <sup>231</sup>	52.34 <sup>345</sup>
25.9	32.681 <sup>250</sup>	41.82 <sup>147</sup>	34.490 <sup>239</sup>	30.07 <sup>256</sup>	27.919 <sup>289</sup>	48.89 <sup>330</sup>
Dec. 5.9	32.931 <sup>284</sup>	43.29 <sup>168</sup>	34.729 <sup>275</sup>	27.51 <sup>253</sup>	28.208 <sup>341</sup>	45.59 <sup>305</sup>
15.8	33.215 <sup>308</sup>	44.97 <sup>183</sup>	35.004 <sup>301</sup>	24.98 <sup>245</sup>	28.549 <sup>383</sup>	42.54 <sup>271</sup>
25.8	33.523 <sup>321</sup>	46.80 <sup>192</sup>	35.305 <sup>321</sup>	22.53 <sup>227</sup>	28.932 <sup>412</sup>	39.83 <sup>227</sup>
35.8	33.844	48.72	35.626	20.26	29.344	37.56
Mean Place	30.929	35.71	33.325	41.73	28.179	67.45
Sec δ, Tan δ	1.011	-0.146	1.051	+0.322	1.546	+1.179
L α, L δ	0.00	-0.4	0.00	-0.4	-0.01	-0.4
ω α, ω δ	-0.01	-0.4	+0.02	-0.4	+0.07	-0.4
AUTHORITY			A. E.		A. E.	

# 364 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\mu$ Centauri. Mag. 3.3		$\zeta$ Centauri. Mag. 3.1		$\eta$ Boötis. Mag. 2.8	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 13 <sup>m</sup> 44	<sup>°</sup> 42 <sup>'</sup> 4	<sup>h</sup> 13 <sup>m</sup> 50	<sup>°</sup> 46 <sup>'</sup> 54	<sup>h</sup> 13 <sup>m</sup> 50	<sup>°</sup> 18 <sup>'</sup> 46
Jan. 0.8	54.894 <sub>409</sub>	53.56 <sub>128</sub>	40.180 <sub>439</sub>	2.54 <sub>109</sub>	57.867 <sub>326</sub>	72.63 <sub>214</sub>
10.8	55.303 <sub>405</sub>	54.84 <sub>161</sub>	40.619 <sub>434</sub>	3.63 <sub>147</sub>	58.193 <sub>327</sub>	70.49 <sub>184</sub>
20.8	55.708 <sub>391</sub>	56.45 <sub>190</sub>	41.053 <sub>421</sub>	5.10 <sub>182</sub>	58.520 <sub>318</sub>	68.65 <sub>150</sub>
30.7	56.099 <sub>367</sub>	58.35 <sub>213</sub>	41.474 <sub>396</sub>	6.92 <sub>208</sub>	58.838 <sub>303</sub>	67.15 <sub>109</sub>
Feb. 9.7	56.466 <sub>334</sub>	60.48 <sub>228</sub>	41.870 <sub>363</sub>	9.00 <sub>230</sub>	59.141 <sub>276</sub>	66.06 <sub>65</sub>
19.7	56.800 <sub>298</sub>	62.76 <sub>239</sub>	42.233 <sub>325</sub>	11.30 <sub>245</sub>	59.417 <sub>249</sub>	65.41 <sub>24</sub>
Mar. 1.6	57.098 <sub>257</sub>	65.15 <sub>242</sub>	42.558 <sub>282</sub>	13.75 <sub>253</sub>	59.666 <sub>211</sub>	65.17 <sub>21</sub>
11.6	57.355 <sub>214</sub>	67.57 <sub>241</sub>	42.840 <sub>239</sub>	16.28 <sub>256</sub>	59.877 <sub>176</sub>	65.38 <sub>57</sub>
21.6	57.569 <sub>173</sub>	69.98 <sub>236</sub>	43.079 <sub>192</sub>	18.84 <sub>253</sub>	60.053 <sub>139</sub>	65.95 <sub>92</sub>
31.6	57.742 <sub>130</sub>	72.34 <sub>226</sub>	43.271 <sub>149</sub>	21.37 <sub>246</sub>	60.192 <sub>102</sub>	66.87 <sub>118</sub>
Apr. 10.5	57.872 <sub>91</sub>	74.60 <sub>212</sub>	43.420 <sub>105</sub>	23.83 <sub>236</sub>	60.294 <sub>70</sub>	68.05 <sub>140</sub>
20.5	57.963 <sub>52</sub>	76.72 <sub>195</sub>	43.525 <sub>60</sub>	26.19 <sub>221</sub>	60.364 <sub>35</sub>	69.45 <sub>153</sub>
30.5	58.015 <sub>14</sub>	78.67 <sub>176</sub>	43.585 <sub>20</sub>	28.40 <sub>200</sub>	60.399 <sub>6</sub>	70.98 <sub>160</sub>
May 10.5	58.029 <sub>21</sub>	80.43 <sub>153</sub>	43.605 <sub>20</sub>	30.40 <sub>179</sub>	60.405 <sub>23</sub>	72.58 <sub>161</sub>
20.4	58.008 <sub>54</sub>	81.96 <sub>129</sub>	43.585 <sub>57</sub>	32.19 <sub>153</sub>	60.382 <sub>45</sub>	74.19 <sub>157</sub>
30.4	57.954 <sub>86</sub>	83.25 <sub>101</sub>	43.528 <sub>96</sub>	33.72 <sub>126</sub>	60.337 <sub>70</sub>	75.76 <sub>144</sub>
June 9.4	57.868 <sub>116</sub>	84.26 <sub>72</sub>	43.432 <sub>126</sub>	34.98 <sub>95</sub>	60.267 <sub>92</sub>	77.20 <sub>130</sub>
19.3	57.752 <sub>142</sub>	84.98 <sub>41</sub>	43.306 <sub>156</sub>	35.93 <sub>60</sub>	60.175 <sub>106</sub>	78.50 <sub>113</sub>
29.3	57.610 <sub>164</sub>	85.39 <sub>9</sub>	43.150 <sub>183</sub>	36.53 <sub>26</sub>	60.069 <sub>123</sub>	79.63 <sub>91</sub>
July 9.3	57.446 <sub>182</sub>	85.48 <sub>24</sub>	42.967 <sub>203</sub>	36.79 <sub>10</sub>	59.946 <sub>134</sub>	80.54 <sub>70</sub>
19.3	57.264 <sub>194</sub>	85.24 <sub>55</sub>	42.764 <sub>219</sub>	36.69 <sub>46</sub>	59.812 <sub>142</sub>	81.24 <sub>42</sub>
29.2	57.070 <sub>199</sub>	84.69 <sub>87</sub>	42.545 <sub>225</sub>	36.23 <sub>81</sub>	59.670 <sub>146</sub>	81.66 <sub>16</sub>
Aug. 8.2	56.871 <sub>195</sub>	83.82 <sub>115</sub>	42.320 <sub>219</sub>	35.42 <sub>112</sub>	59.524 <sub>144</sub>	81.82 <sub>10</sub>
18.2	56.676 <sub>184</sub>	82.67 <sub>139</sub>	42.101 <sub>209</sub>	34.30 <sub>143</sub>	59.380 <sub>139</sub>	81.72 <sub>38</sub>
28.2	56.492 <sub>163</sub>	81.28 <sub>160</sub>	41.892 <sub>185</sub>	32.87 <sub>166</sub>	59.241 <sub>122</sub>	81.34 <sub>70</sub>
Sept. 7.1	56.329 <sub>129</sub>	79.68 <sub>174</sub>	41.707 <sub>151</sub>	31.21 <sub>186</sub>	59.119 <sub>100</sub>	80.64 <sub>94</sub>
17.1	56.200 <sub>89</sub>	77.94 <sub>182</sub>	41.556 <sub>106</sub>	29.35 <sub>197</sub>	59.019 <sub>75</sub>	79.70 <sub>125</sub>
27.1	56.111 <sub>39</sub>	76.12 <sub>181</sub>	41.450 <sub>54</sub>	27.38 <sub>200</sub>	58.944 <sub>40</sub>	78.45 <sub>152</sub>
Oct. 7.0	56.072 <sub>17</sub>	74.31 <sub>173</sub>	41.396 <sub>7</sub>	25.38 <sub>195</sub>	58.904 <sub>0</sub>	76.93 <sub>178</sub>
17.0	56.089 <sub>78</sub>	72.58 <sub>155</sub>	41.403 <sub>76</sub>	23.43 <sub>181</sub>	58.904 <sub>48</sub>	75.15 <sub>203</sub>
27.0	56.167 <sub>143</sub>	71.03 <sub>131</sub>	41.479 <sub>142</sub>	21.62 <sub>159</sub>	58.952 <sub>95</sub>	73.12 <sub>227</sub>
Nov. 6.0	56.310 <sub>204</sub>	69.72 <sub>100</sub>	41.621 <sub>211</sub>	20.03 <sub>129</sub>	59.047 <sub>143</sub>	70.85 <sub>241</sub>
15.9	56.514 <sub>263</sub>	68.72 <sub>63</sub>	41.832 <sub>274</sub>	18.74 <sub>90</sub>	59.190 <sub>193</sub>	68.44 <sub>255</sub>
25.9	56.777 <sub>315</sub>	68.09 <sub>21</sub>	42.106 <sub>329</sub>	17.84 <sub>49</sub>	59.383 <sub>233</sub>	65.89 <sub>261</sub>
Dec. 5.9	57.092 <sub>355</sub>	67.88 <sub>21</sub>	42.435 <sub>376</sub>	17.35 <sub>5</sub>	59.616 <sub>271</sub>	63.28 <sub>259</sub>
15.8	57.447 <sub>386</sub>	68.09 <sub>64</sub>	42.811 <sub>408</sub>	17.30 <sub>40</sub>	59.887 <sub>298</sub>	60.69 <sub>249</sub>
25.8	57.833 <sub>403</sub>	68.73 <sub>105</sub>	43.219 <sub>429</sub>	17.70 <sub>83</sub>	60.185 <sub>320</sub>	58.20 <sub>231</sub>
35.8	58.236	69.78	43.648	18.53	60.505	55.89
Mean Place	54.578	68.15	39.862	18.51	58.252	77.43
Sec $\delta$ , Tan $\delta$	1.347	-0.903	1.464	-1.069	1.056	+0.340
L $\alpha$ , L $\delta$	+0.01	-0.4	+0.01	-0.4	0.00	-0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.05	-0.4	-0.06	-0.5	+0.02	-0.5
AUTHORITY	A. N.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 365

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\tau$ Virginis. Mag. 4.3		$\beta$ Centauri. Mag. 0.9		$\pi$ Hydræ. Mag. 3.5	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 13 <sup>m</sup> 57	<sup>°</sup> 1 55	<sup>h</sup> 13 <sup>m</sup> 58	<sup>°</sup> 59 59	<sup>h</sup> 14 <sup>m</sup> 1	<sup>°</sup> 26 18
Jan. 0.8	40.319 <sup>317</sup>	18.09 <sup>203</sup>	18.686 <sup>563</sup>	31.89 <sup>67</sup>	55.511 <sup>348</sup>	16.04 <sup>149</sup>
10.8	40.636 <sup>319</sup>	16.06 <sup>189</sup>	19.249 <sup>565</sup>	32.56 <sup>113</sup>	55.859 <sup>352</sup>	17.53 <sup>168</sup>
20.8	40.955 <sup>310</sup>	14.17 <sup>173</sup>	19.814 <sup>551</sup>	33.69 <sup>158</sup>	56.211 <sup>341</sup>	19.21 <sup>181</sup>
30.7	41.265 <sup>293</sup>	12.44 <sup>147</sup>	20.365 <sup>521</sup>	35.27 <sup>195</sup>	56.552 <sup>323</sup>	21.02 <sup>188</sup>
Feb. 9.7	41.558 <sup>272</sup>	10.97 <sup>121</sup>	20.886 <sup>485</sup>	37.22 <sup>230</sup>	56.875 <sup>299</sup>	22.90 <sup>189</sup>
19.7	41.830 <sup>241</sup>	9.76 <sup>90</sup>	21.371 <sup>435</sup>	39.52 <sup>256</sup>	57.174 <sup>269</sup>	24.79 <sup>186</sup>
Mar. 1.7	42.071 <sup>210</sup>	8.86 <sup>57</sup>	21.806 <sup>384</sup>	42.08 <sup>276</sup>	57.443 <sup>235</sup>	26.65 <sup>177</sup>
11.6	42.281 <sup>178</sup>	8.29 <sup>30</sup>	22.190 <sup>323</sup>	44.84 <sup>289</sup>	57.678 <sup>201</sup>	28.42 <sup>167</sup>
21.6	42.459 <sup>144</sup>	7.99 <sup>1</sup>	22.513 <sup>266</sup>	47.73 <sup>296</sup>	57.879 <sup>166</sup>	30.09 <sup>153</sup>
31.6	42.603 <sup>112</sup>	8.00 <sup>24</sup>	22.779 <sup>204</sup>	50.69 <sup>296</sup>	58.045 <sup>132</sup>	31.62 <sup>139</sup>
Apr. 10.5	42.715 <sup>80</sup>	8.24 <sup>46</sup>	22.983 <sup>145</sup>	53.65 <sup>291</sup>	58.177 <sup>100</sup>	33.01 <sup>122</sup>
20.5	42.795 <sup>49</sup>	8.70 <sup>62</sup>	23.128 <sup>81</sup>	56.56 <sup>279</sup>	58.277 <sup>67</sup>	34.23 <sup>106</sup>
30.5	42.844 <sup>24</sup>	9.32 <sup>75</sup>	23.209 <sup>23</sup>	59.35 <sup>264</sup>	58.344 <sup>37</sup>	35.29 <sup>88</sup>
May 10.5	42.868 <sup>3</sup>	10.07 <sup>84</sup>	23.232 <sup>34</sup>	61.99 <sup>241</sup>	58.381 <sup>7</sup>	36.17 <sup>72</sup>
20.4	42.865 <sup>25</sup>	10.91 <sup>88</sup>	23.198 <sup>90</sup>	64.40 <sup>216</sup>	58.388 <sup>20</sup>	36.89 <sup>54</sup>
30.4	42.840 <sup>48</sup>	11.79 <sup>89</sup>	23.108 <sup>146</sup>	66.56 <sup>184</sup>	58.368 <sup>48</sup>	37.43 <sup>35</sup>
June 9.4	42.792 <sup>69</sup>	12.68 <sup>88</sup>	22.962 <sup>192</sup>	68.40 <sup>148</sup>	58.320 <sup>73</sup>	37.78 <sup>18</sup>
19.3	42.723 <sup>90</sup>	13.56 <sup>83</sup>	22.770 <sup>239</sup>	69.88 <sup>111</sup>	58.247 <sup>96</sup>	37.96 <sup>0</sup>
29.3	42.633 <sup>106</sup>	14.39 <sup>76</sup>	22.531 <sup>276</sup>	70.99 <sup>70</sup>	58.151 <sup>117</sup>	37.96 <sup>19</sup>
July 9.3	42.527 <sup>118</sup>	15.15 <sup>70</sup>	22.255 <sup>304</sup>	71.69 <sup>25</sup>	58.034 <sup>135</sup>	37.77 <sup>38</sup>
19.3	42.409 <sup>128</sup>	15.85 <sup>60</sup>	21.951 <sup>323</sup>	71.94 <sup>20</sup>	57.899 <sup>148</sup>	37.39 <sup>55</sup>
29.2	42.281 <sup>134</sup>	16.45 <sup>47</sup>	21.628 <sup>335</sup>	71.74 <sup>67</sup>	57.751 <sup>155</sup>	36.84 <sup>71</sup>
Aug. 8.2	42.147 <sup>133</sup>	16.92 <sup>35</sup>	21.293 <sup>330</sup>	71.07 <sup>108</sup>	57.596 <sup>157</sup>	36.13 <sup>85</sup>
18.2	42.014 <sup>129</sup>	17.27 <sup>22</sup>	20.963 <sup>311</sup>	69.99 <sup>146</sup>	57.439 <sup>151</sup>	35.28 <sup>96</sup>
28.2	41.885 <sup>119</sup>	17.49 <sup>3</sup>	20.652 <sup>279</sup>	68.53 <sup>183</sup>	57.288 <sup>137</sup>	34.32 <sup>105</sup>
Sept. 7.1	41.766 <sup>97</sup>	17.52 <sup>13</sup>	20.373 <sup>234</sup>	66.70 <sup>211</sup>	57.151 <sup>115</sup>	33.27 <sup>108</sup>
17.1	41.669 <sup>71</sup>	17.39 <sup>35</sup>	20.139 <sup>171</sup>	64.59 <sup>234</sup>	57.036 <sup>83</sup>	32.19 <sup>107</sup>
27.1	41.598 <sup>37</sup>	17.04 <sup>58</sup>	19.968 <sup>99</sup>	62.25 <sup>247</sup>	56.953 <sup>45</sup>	31.12 <sup>100</sup>
Oct. 7.1	41.561 <sup>2</sup>	16.46 <sup>80</sup>	19.869 <sup>20</sup>	59.78 <sup>248</sup>	56.908 <sup>1</sup>	30.12 <sup>86</sup>
17.0	41.563 <sup>47</sup>	15.66 <sup>104</sup>	19.849 <sup>72</sup>	57.30 <sup>241</sup>	56.909 <sup>51</sup>	29.26 <sup>68</sup>
27.0	41.610 <sup>93</sup>	14.62 <sup>129</sup>	19.921 <sup>164</sup>	54.89 <sup>221</sup>	56.960 <sup>106</sup>	28.58 <sup>45</sup>
Nov. 6.0	41.703 <sup>141</sup>	13.33 <sup>151</sup>	20.085 <sup>252</sup>	52.68 <sup>197</sup>	57.066 <sup>158</sup>	28.13 <sup>16</sup>
15.9	41.844 <sup>190</sup>	11.82 <sup>174</sup>	20.337 <sup>338</sup>	50.71 <sup>162</sup>	57.224 <sup>212</sup>	27.97 <sup>15</sup>
25.9	42.034 <sup>229</sup>	10.08 <sup>190</sup>	20.675 <sup>411</sup>	49.09 <sup>117</sup>	57.436 <sup>257</sup>	28.12 <sup>48</sup>
Dec. 5.9	42.263 <sup>265</sup>	8.18 <sup>203</sup>	21.086 <sup>477</sup>	47.92 <sup>68</sup>	57.693 <sup>295</sup>	28.60 <sup>79</sup>
15.9	42.528 <sup>293</sup>	6.15 <sup>209</sup>	21.563 <sup>517</sup>	47.24 <sup>18</sup>	57.988 <sup>325</sup>	29.39 <sup>110</sup>
25.8	42.821 <sup>310</sup>	4.06 <sup>208</sup>	22.080 <sup>554</sup>	47.06 <sup>36</sup>	58.313 <sup>343</sup>	30.49 <sup>137</sup>
35.8	43.131	1.98	22.634	47.42	58.656	31.86
Mean Place	40.526	17.08	18.281	50.89	55.472	26.44
Sec $\delta$ , Tan $\delta$	1.001	+0.033	2.000	-1.732	1.116	-0.494
L $\alpha$ , L $\delta$	0.00	-0.3	+0.02	-0.3	+0.01	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	-0.5	-0.10	-0.5	-0.03	-0.5
AUTHORITY	A. E.		A. E.		A. N.	

# 366 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\theta$ Centauri. Mag. 2.3		94 Virginis. Mag. 6.6		$\alpha$ Draconis. Mag. 3.6	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 14 <sup>s</sup> 2 <sup>m</sup>	<sup>°</sup> 35 <sup>'</sup> 58 <sup>"</sup>	<sup>h</sup> 14 <sup>s</sup> 2 <sup>m</sup>	<sup>°</sup> 8 <sup>'</sup> 31 <sup>"</sup>	<sup>h</sup> 14 <sup>s</sup> 2 <sup>m</sup>	<sup>°</sup> 64 <sup>'</sup> 44 <sup>"</sup>
Jan. 0.8	5.243 <sup>378</sup>	59.54 <sup>126</sup>	9.641 <sup>321</sup>	7.60 <sup>186</sup>	14.51 <sup>57</sup>	39.21 <sup>193</sup>
10.8	5.621 <sup>379</sup>	60.80 <sup>155</sup>	9.962 <sup>323</sup>	9.46 <sup>185</sup>	15.08 <sup>59</sup>	37.28 <sup>131</sup>
20.8	6.000 <sup>370</sup>	62.35 <sup>176</sup>	10.285 <sup>315</sup>	11.31 <sup>178</sup>	15.67 <sup>59</sup>	35.97 <sup>65</sup>
30.7	6.370 <sup>349</sup>	64.11 <sup>196</sup>	10.600 <sup>298</sup>	13.09 <sup>167</sup>	16.26 <sup>58</sup>	35.32 <sup>0</sup>
Feb. 9.7	6.719 <sup>323</sup>	66.07 <sup>207</sup>	10.898 <sup>276</sup>	14.76 <sup>148</sup>	16.84 <sup>54</sup>	35.32 <sup>66</sup>
19.7	7.042 <sup>291</sup>	68.14 <sup>213</sup>	11.174 <sup>247</sup>	16.24 <sup>128</sup>	17.38 <sup>49</sup>	35.98 <sup>129</sup>
Mar. 1.7	7.333 <sup>256</sup>	70.27 <sup>213</sup>	11.421 <sup>217</sup>	17.52 <sup>105</sup>	17.87 <sup>42</sup>	37.27 <sup>183</sup>
11.6	7.589 <sup>220</sup>	72.40 <sup>209</sup>	11.638 <sup>184</sup>	18.57 <sup>81</sup>	18.29 <sup>34</sup>	39.10 <sup>234</sup>
21.6	7.809 <sup>180</sup>	74.49 <sup>201</sup>	11.822 <sup>151</sup>	19.38 <sup>58</sup>	18.63 <sup>25</sup>	41.44 <sup>268</sup>
31.6	7.989 <sup>143</sup>	76.50 <sup>191</sup>	11.973 <sup>120</sup>	19.96 <sup>36</sup>	18.88 <sup>17</sup>	44.12 <sup>295</sup>
Apr. 10.5	8.132 <sup>107</sup>	78.41 <sup>177</sup>	12.093 <sup>88</sup>	20.32 <sup>15</sup>	19.05 <sup>8</sup>	47.07 <sup>308</sup>
20.5	8.239 <sup>71</sup>	80.18 <sup>164</sup>	12.181 <sup>60</sup>	20.47 <sup>1</sup>	19.13 <sup>1</sup>	50.15 <sup>311</sup>
30.5	8.310 <sup>37</sup>	81.82 <sup>145</sup>	12.241 <sup>32</sup>	20.46 <sup>17</sup>	19.12 <sup>9</sup>	53.26 <sup>304</sup>
May 10.5	8.347 <sup>3</sup>	83.27 <sup>125</sup>	12.273 <sup>7</sup>	20.29 <sup>28</sup>	19.03 <sup>16</sup>	56.30 <sup>283</sup>
20.4	8.350 <sup>28</sup>	84.52 <sup>106</sup>	12.280 <sup>20</sup>	20.01 <sup>38</sup>	18.87 <sup>23</sup>	59.13 <sup>257</sup>
30.4	8.322 <sup>59</sup>	85.58 <sup>84</sup>	12.260 <sup>42</sup>	19.63 <sup>46</sup>	18.64 <sup>29</sup>	61.70 <sup>223</sup>
June 9.4	8.263 <sup>90</sup>	86.42 <sup>56</sup>	12.218 <sup>64</sup>	19.17 <sup>52</sup>	18.35 <sup>34</sup>	63.93 <sup>181</sup>
19.4	8.173 <sup>114</sup>	86.98 <sup>34</sup>	12.154 <sup>85</sup>	18.65 <sup>57</sup>	18.01 <sup>38</sup>	65.74 <sup>133</sup>
29.3	8.059 <sup>139</sup>	87.32 <sup>6</sup>	12.069 <sup>103</sup>	18.08 <sup>59</sup>	17.63 <sup>41</sup>	67.07 <sup>85</sup>
July 9.3	7.920 <sup>157</sup>	87.38 <sup>19</sup>	11.966 <sup>117</sup>	17.49 <sup>61</sup>	17.22 <sup>42</sup>	67.92 <sup>32</sup>
19.3	7.763 <sup>172</sup>	87.19 <sup>47</sup>	11.849 <sup>129</sup>	16.88 <sup>62</sup>	16.80 <sup>44</sup>	68.24 <sup>17</sup>
29.2	7.591 <sup>181</sup>	86.72 <sup>71</sup>	11.720 <sup>136</sup>	16.26 <sup>60</sup>	16.36 <sup>43</sup>	68.07 <sup>74</sup>
Aug. 8.2	7.410 <sup>181</sup>	86.01 <sup>95</sup>	11.584 <sup>137</sup>	15.66 <sup>57</sup>	15.93 <sup>43</sup>	67.33 <sup>122</sup>
18.2	7.229 <sup>175</sup>	85.06 <sup>113</sup>	11.447 <sup>133</sup>	15.09 <sup>52</sup>	15.50 <sup>39</sup>	66.11 <sup>170</sup>
28.2	7.054 <sup>158</sup>	83.93 <sup>132</sup>	11.314 <sup>121</sup>	14.57 <sup>44</sup>	15.11 <sup>37</sup>	64.41 <sup>217</sup>
Sept. 7.1	6.896 <sup>133</sup>	82.61 <sup>143</sup>	11.193 <sup>102</sup>	14.13 <sup>34</sup>	14.74 <sup>31</sup>	62.24 <sup>255</sup>
17.1	6.763 <sup>95</sup>	81.18 <sup>148</sup>	11.091 <sup>74</sup>	13.79 <sup>20</sup>	14.43 <sup>26</sup>	59.69 <sup>294</sup>
27.1	6.668 <sup>55</sup>	79.70 <sup>147</sup>	11.017 <sup>41</sup>	13.59 <sup>2</sup>	14.17 <sup>19</sup>	56.75 <sup>327</sup>
Oct. 7.1	6.613 <sup>3</sup>	78.23 <sup>138</sup>	10.976 <sup>0</sup>	13.57 <sup>17</sup>	13.98 <sup>12</sup>	53.48 <sup>350</sup>
17.0	6.610 <sup>54</sup>	76.85 <sup>124</sup>	10.976 <sup>45</sup>	13.74 <sup>40</sup>	13.86 <sup>3</sup>	49.98 <sup>367</sup>
27.0	6.664 <sup>112</sup>	75.61 <sup>100</sup>	11.021 <sup>94</sup>	14.14 <sup>64</sup>	13.83 <sup>7</sup>	46.31 <sup>379</sup>
Nov. 6.0	6.776 <sup>173</sup>	74.61 <sup>71</sup>	11.115 <sup>143</sup>	14.78 <sup>91</sup>	13.90 <sup>16</sup>	42.52 <sup>378</sup>
15.9	6.949 <sup>227</sup>	73.90 <sup>40</sup>	11.258 <sup>190</sup>	15.69 <sup>115</sup>	14.06 <sup>26</sup>	38.74 <sup>367</sup>
25.9	7.176 <sup>278</sup>	73.50 <sup>1</sup>	11.448 <sup>233</sup>	16.84 <sup>139</sup>	14.32 <sup>33</sup>	35.07 <sup>348</sup>
Dec. 5.9	7.454 <sup>320</sup>	73.49 <sup>35</sup>	11.681 <sup>269</sup>	18.23 <sup>160</sup>	14.65 <sup>43</sup>	31.59 <sup>321</sup>
15.9	7.774 <sup>350</sup>	73.84 <sup>72</sup>	11.950 <sup>297</sup>	19.83 <sup>174</sup>	15.08 <sup>50</sup>	28.38 <sup>278</sup>
25.8	8.124 <sup>371</sup>	74.56 <sup>108</sup>	12.247 <sup>315</sup>	21.57 <sup>184</sup>	15.58 <sup>54</sup>	25.60 <sup>231</sup>
35.8	8.495	75.64	12.562	23.41	16.12	23.29
Mean Place	5.124	72.83	9.765	12.28	16.68	53.76
Sec $\delta$ , Tan $\delta$	1.236	-0.726	1.011	-0.150	2.344	+2.120
L $\alpha$ , L $\delta$	+0.01	-0.3	0.00	-0.3	-0.03	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.04	-0.5	-0.01	-0.5	+0.12	-0.5
AUTHORITY	A. E.				A. E.	

# APPARENT PLACES OF STARS, 1922. 367

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\kappa$ Virginis. Mag. 4.3		$\alpha$ Boötis. Mag. 0.2		2 Libræ. Mag. 6.3	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 14 8	<sup>°</sup> <sup>'</sup> 9 54	<sup>h</sup> <sup>m</sup> 14 12	<sup>°</sup> <sup>'</sup> 19 34	<sup>h</sup> <sup>m</sup> 14 19	<sup>°</sup> <sup>'</sup> 11 21
Jan.	0.8 43.792 <sup>320</sup>	35.42 <sup>180</sup>	5.668 <sup>315</sup>	72.34 <sup>227</sup>	13.404 <sup>320</sup>	24.39 <sup>174</sup>
	10.8 44.112 <sup>322</sup>	37.22 <sup>182</sup>	5.983 <sup>324</sup>	70.07 <sup>197</sup>	13.724 <sup>324</sup>	26.13 <sup>177</sup>
	20.8 44.434 <sup>319</sup>	39.04 <sup>176</sup>	6.307 <sup>319</sup>	68.10 <sup>161</sup>	14.048 <sup>320</sup>	27.90 <sup>174</sup>
	30.7 44.753 <sup>302</sup>	40.80 <sup>167</sup>	6.626 <sup>307</sup>	66.49 <sup>122</sup>	14.368 <sup>306</sup>	29.64 <sup>164</sup>
Feb.	9.7 45.055 <sup>278</sup>	42.47 <sup>149</sup>	6.933 <sup>286</sup>	65.27 <sup>74</sup>	14.674 <sup>285</sup>	31.28 <sup>151</sup>
	19.7 45.333 <sup>256</sup>	43.96 <sup>131</sup>	7.219 <sup>262</sup>	64.53 <sup>31</sup>	14.959 <sup>260</sup>	32.79 <sup>132</sup>
Mar.	1.7 45.589 <sup>224</sup>	45.27 <sup>110</sup>	7.481 <sup>226</sup>	64.22 <sup>9</sup>	15.219 <sup>231</sup>	34.11 <sup>113</sup>
	11.6 45.813 <sup>189</sup>	46.37 <sup>86</sup>	7.707 <sup>190</sup>	64.31 <sup>53</sup>	15.450 <sup>200</sup>	35.24 <sup>91</sup>
	21.6 46.002 <sup>160</sup>	47.23 <sup>63</sup>	7.897 <sup>159</sup>	64.84 <sup>90</sup>	15.650 <sup>169</sup>	36.15 <sup>70</sup>
	31.6 46.162 <sup>127</sup>	47.86 <sup>42</sup>	8.056 <sup>122</sup>	65.74 <sup>116</sup>	15.819 <sup>138</sup>	36.85 <sup>49</sup>
Apr.	10.5 46.289 <sup>97</sup>	48.28 <sup>24</sup>	8.178 <sup>89</sup>	66.90 <sup>141</sup>	15.957 <sup>108</sup>	37.34 <sup>30</sup>
	20.5 46.386 <sup>68</sup>	48.52 <sup>7</sup>	8.267 <sup>53</sup>	68.31 <sup>157</sup>	16.065 <sup>78</sup>	37.64 <sup>13</sup>
	30.5 46.454 <sup>36</sup>	48.59 <sup>9</sup>	8.320 <sup>24</sup>	69.88 <sup>165</sup>	16.143 <sup>50</sup>	37.77 <sup>2</sup>
May	10.5 46.490 <sup>15</sup>	48.50 <sup>22</sup>	8.344 <sup>6</sup>	71.53 <sup>168</sup>	16.193 <sup>22</sup>	37.75 <sup>14</sup>
	20.4 46.505 <sup>14</sup>	48.28 <sup>32</sup>	8.338 <sup>34</sup>	73.21 <sup>162</sup>	16.215 <sup>4</sup>	37.61 <sup>25</sup>
	30.4 46.491 <sup>37</sup>	47.96 <sup>42</sup>	8.304 <sup>57</sup>	74.83 <sup>154</sup>	16.211 <sup>29</sup>	37.36 <sup>33</sup>
June	9.4 46.454 <sup>61</sup>	47.54 <sup>47</sup>	8.247 <sup>84</sup>	76.37 <sup>139</sup>	16.182 <sup>54</sup>	37.03 <sup>41</sup>
	19.4 46.393 <sup>85</sup>	47.07 <sup>52</sup>	8.163 <sup>104</sup>	77.76 <sup>121</sup>	16.128 <sup>76</sup>	36.62 <sup>46</sup>
	29.3 46.308 <sup>99</sup>	46.55 <sup>57</sup>	8.059 <sup>119</sup>	78.97 <sup>98</sup>	16.052 <sup>98</sup>	36.16 <sup>52</sup>
July	9.3 46.209 <sup>116</sup>	45.98 <sup>60</sup>	7.940 <sup>136</sup>	79.95 <sup>77</sup>	15.954 <sup>116</sup>	35.64 <sup>55</sup>
	19.3 46.093 <sup>133</sup>	45.38 <sup>62</sup>	7.804 <sup>149</sup>	80.72 <sup>48</sup>	15.838 <sup>130</sup>	35.09 <sup>57</sup>
	29.2 45.960 <sup>138</sup>	44.76 <sup>60</sup>	7.655 <sup>154</sup>	81.20 <sup>21</sup>	15.708 <sup>139</sup>	34.52 <sup>59</sup>
Aug.	8.2 45.822 <sup>139</sup>	44.16 <sup>59</sup>	7.501 <sup>156</sup>	81.41 <sup>8</sup>	15.569 <sup>145</sup>	33.93 <sup>58</sup>
	18.2 45.683 <sup>137</sup>	43.57 <sup>55</sup>	7.345 <sup>151</sup>	81.33 <sup>36</sup>	15.424 <sup>142</sup>	33.35 <sup>56</sup>
	28.2 45.546 <sup>126</sup>	43.02 <sup>48</sup>	7.194 <sup>142</sup>	80.97 <sup>66</sup>	15.282 <sup>132</sup>	32.79 <sup>51</sup>
Sept.	7.1 45.420 <sup>108</sup>	42.54 <sup>40</sup>	7.052 <sup>125</sup>	80.31 <sup>97</sup>	15.150 <sup>116</sup>	32.28 <sup>43</sup>
	17.1 45.312 <sup>77</sup>	42.14 <sup>26</sup>	6.927 <sup>96</sup>	79.34 <sup>126</sup>	15.034 <sup>89</sup>	31.85 <sup>33</sup>
	27.1 45.235 <sup>46</sup>	41.88 <sup>10</sup>	6.831 <sup>63</sup>	78.08 <sup>155</sup>	14.945 <sup>56</sup>	31.52 <sup>18</sup>
Oct.	7.1 45.189 <sup>6</sup>	41.78 <sup>8</sup>	6.768 <sup>24</sup>	76.53 <sup>182</sup>	14.889 <sup>17</sup>	31.34 <sup>0</sup>
	17.0 45.183 <sup>41</sup>	41.86 <sup>29</sup>	6.744 <sup>22</sup>	74.71 <sup>210</sup>	14.872 <sup>29</sup>	31.34 <sup>20</sup>
	27.0 45.224 <sup>88</sup>	42.15 <sup>58</sup>	6.766 <sup>69</sup>	72.61 <sup>229</sup>	14.901 <sup>78</sup>	31.54 <sup>45</sup>
Nov.	6.0 45.312 <sup>137</sup>	42.73 <sup>79</sup>	6.835 <sup>119</sup>	70.32 <sup>250</sup>	14.979 <sup>129</sup>	31.99 <sup>69</sup>
	15.9 45.449 <sup>186</sup>	43.52 <sup>106</sup>	6.954 <sup>167</sup>	67.82 <sup>264</sup>	15.108 <sup>177</sup>	32.68 <sup>94</sup>
	25.9 45.635 <sup>228</sup>	44.58 <sup>128</sup>	7.121 <sup>216</sup>	65.18 <sup>271</sup>	15.285 <sup>222</sup>	33.62 <sup>119</sup>
Dec.	5.9 45.863 <sup>267</sup>	45.86 <sup>150</sup>	7.337 <sup>253</sup>	62.47 <sup>269</sup>	15.507 <sup>260</sup>	34.81 <sup>141</sup>
	15.9 46.130 <sup>294</sup>	47.36 <sup>165</sup>	7.590 <sup>288</sup>	59.78 <sup>261</sup>	15.767 <sup>291</sup>	36.22 <sup>158</sup>
	25.8 46.424 <sup>312</sup>	49.01 <sup>180</sup>	7.878 <sup>308</sup>	57.17 <sup>241</sup>	16.058 <sup>312</sup>	37.80 <sup>170</sup>
	35.8 46.736	50.81	8.186	54.76	16.370	39.50
Mean Place	43.942	40.78	6.179	76.31	13.599	30.56
Sec $\delta$ , Tan $\delta$	1.015	-0.175	1.061	+0.356	1.020	-0.201
L $\alpha$ , L $\delta$	0.00	-0.3	-0.01	-0.3	0.00	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	-0.5	+0.02	-0.5	-0.01	-0.6
AUTHORITY	A. E.		A. E.			

368 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	<i>f</i> Boötis. Mag. 5.4		<i>ρ</i> Boötis. Mag. 3.8		<i>γ</i> Boötis. Mag. 3.0	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 14 22	<sup>°</sup> <sup>'</sup> 19 34	<sup>h</sup> <sup>m</sup> 14 28	<sup>°</sup> <sup>'</sup> 30 42	<sup>h</sup> <sup>m</sup> 14 28	<sup>°</sup> <sup>'</sup> 38 38
Jan. 0.8	49.086 <sup>315</sup>	33.38 <sup>226</sup>	27.342 <sup>329</sup>	41.17 <sup>235</sup>	55.288 <sup>348</sup>	47.73 <sup>240</sup>
10.8	49.401 <sup>325</sup>	31.12 <sup>197</sup>	27.671 <sup>339</sup>	38.82 <sup>196</sup>	55.636 <sup>364</sup>	45.33 <sup>193</sup>
20.8	49.726 <sup>321</sup>	29.15 <sup>160</sup>	28.010 <sup>342</sup>	36.86 <sup>153</sup>	56.000 <sup>365</sup>	43.40 <sup>144</sup>
30.7	50.047 <sup>311</sup>	27.55 <sup>119</sup>	28.352 <sup>332</sup>	35.33 <sup>102</sup>	56.365 <sup>358</sup>	41.96 <sup>86</sup>
Feb. 9.7	50.358 <sup>292</sup>	26.36 <sup>76</sup>	28.684 <sup>313</sup>	34.31 <sup>49</sup>	56.723 <sup>335</sup>	41.10 <sup>29</sup>
19.7	50.650 <sup>266</sup>	25.60 <sup>31</sup>	28.997 <sup>287</sup>	33.82 <sup>3</sup>	57.058 <sup>311</sup>	40.81 <sup>29</sup>
Mar. 1.7	50.916 <sup>236</sup>	25.29 <sup>15</sup>	29.284 <sup>259</sup>	33.85 <sup>56</sup>	57.369 <sup>276</sup>	41.10 <sup>84</sup>
11.6	51.152 <sup>203</sup>	25.44 <sup>55</sup>	29.543 <sup>222</sup>	34.41 <sup>103</sup>	57.645 <sup>237</sup>	41.94 <sup>133</sup>
21.6	51.355 <sup>169</sup>	25.99 <sup>92</sup>	29.765 <sup>182</sup>	35.44 <sup>142</sup>	57.882 <sup>194</sup>	43.27 <sup>175</sup>
31.6	51.524 <sup>134</sup>	26.91 <sup>123</sup>	29.947 <sup>144</sup>	36.86 <sup>176</sup>	58.076 <sup>152</sup>	45.02 <sup>210</sup>
Apr. 10.6	51.658 <sup>100</sup>	28.14 <sup>147</sup>	30.091 <sup>106</sup>	38.62 <sup>202</sup>	58.228 <sup>109</sup>	47.12 <sup>235</sup>
20.5	51.758 <sup>68</sup>	29.61 <sup>164</sup>	30.197 <sup>70</sup>	40.64 <sup>216</sup>	58.337 <sup>65</sup>	49.47 <sup>249</sup>
30.5	51.826 <sup>36</sup>	31.25 <sup>174</sup>	30.267 <sup>32</sup>	42.80 <sup>225</sup>	58.402 <sup>25</sup>	51.96 <sup>256</sup>
May 10.5	51.862 <sup>6</sup>	32.99 <sup>176</sup>	30.299 <sup>2</sup>	45.05 <sup>225</sup>	58.427 <sup>14</sup>	54.52 <sup>252</sup>
20.4	51.868 <sup>22</sup>	34.75 <sup>173</sup>	30.297 <sup>34</sup>	47.30 <sup>216</sup>	58.413 <sup>51</sup>	57.04 <sup>239</sup>
30.4	51.846 <sup>48</sup>	36.48 <sup>164</sup>	30.263 <sup>64</sup>	49.46 <sup>201</sup>	58.362 <sup>84</sup>	59.43 <sup>221</sup>
June 9.4	51.798 <sup>74</sup>	38.12 <sup>150</sup>	30.199 <sup>93</sup>	51.47 <sup>180</sup>	58.278 <sup>114</sup>	61.64 <sup>195</sup>
19.4	51.724 <sup>95</sup>	39.62 <sup>132</sup>	30.106 <sup>118</sup>	53.27 <sup>155</sup>	58.164 <sup>143</sup>	63.59 <sup>166</sup>
29.3	51.629 <sup>115</sup>	40.94 <sup>110</sup>	29.988 <sup>139</sup>	54.82 <sup>127</sup>	58.021 <sup>164</sup>	65.25 <sup>129</sup>
July 9.3	51.514 <sup>133</sup>	42.04 <sup>86</sup>	29.849 <sup>157</sup>	56.09 <sup>92</sup>	57.857 <sup>185</sup>	66.54 <sup>92</sup>
19.3	51.381 <sup>146</sup>	42.90 <sup>59</sup>	29.692 <sup>169</sup>	57.01 <sup>56</sup>	57.672 <sup>199</sup>	67.46 <sup>50</sup>
29.3	51.235 <sup>155</sup>	43.49 <sup>33</sup>	29.523 <sup>181</sup>	57.57 <sup>23</sup>	57.473 <sup>206</sup>	67.96 <sup>11</sup>
Aug. 8.2	51.080 <sup>158</sup>	43.82 <sup>3</sup>	29.342 <sup>183</sup>	57.80 <sup>16</sup>	57.267 <sup>211</sup>	68.07 <sup>33</sup>
18.2	50.922 <sup>156</sup>	43.85 <sup>26</sup>	29.159 <sup>181</sup>	57.64 <sup>55</sup>	57.056 <sup>207</sup>	67.74 <sup>75</sup>
28.2	50.766 <sup>146</sup>	43.59 <sup>56</sup>	28.978 <sup>173</sup>	57.09 <sup>89</sup>	56.849 <sup>194</sup>	66.99 <sup>115</sup>
Sept. 7.1	50.620 <sup>130</sup>	43.03 <sup>86</sup>	28.805 <sup>152</sup>	56.20 <sup>128</sup>	56.655 <sup>176</sup>	65.84 <sup>153</sup>
17.1	50.490 <sup>105</sup>	42.17 <sup>116</sup>	28.653 <sup>127</sup>	54.92 <sup>160</sup>	56.479 <sup>147</sup>	64.31 <sup>194</sup>
27.1	50.385 <sup>72</sup>	41.01 <sup>146</sup>	28.526 <sup>92</sup>	53.32 <sup>197</sup>	56.332 <sup>111</sup>	62.37 <sup>229</sup>
Oct. 7.1	50.313 <sup>35</sup>	39.55 <sup>173</sup>	28.434 <sup>52</sup>	51.35 <sup>227</sup>	56.221 <sup>65</sup>	60.08 <sup>258</sup>
17.0	50.278 <sup>12</sup>	37.82 <sup>201</sup>	28.382 <sup>7</sup>	49.08 <sup>251</sup>	56.156 <sup>17</sup>	57.50 <sup>287</sup>
27.0	50.290 <sup>59</sup>	35.81 <sup>223</sup>	28.375 <sup>48</sup>	46.57 <sup>277</sup>	56.139 <sup>39</sup>	54.63 <sup>307</sup>
Nov. 6.0	50.349 <sup>109</sup>	33.58 <sup>244</sup>	28.423 <sup>98</sup>	43.80 <sup>295</sup>	56.178 <sup>98</sup>	51.56 <sup>324</sup>
16.0	50.458 <sup>160</sup>	31.14 <sup>257</sup>	28.521 <sup>153</sup>	40.85 <sup>300</sup>	56.276 <sup>154</sup>	48.32 <sup>330</sup>
25.9	50.618 <sup>206</sup>	28.57 <sup>265</sup>	28.674 <sup>207</sup>	37.85 <sup>308</sup>	56.430 <sup>212</sup>	45.02 <sup>328</sup>
Dec. 5.9	50.824 <sup>247</sup>	25.92 <sup>265</sup>	28.881 <sup>249</sup>	34.77 <sup>298</sup>	56.642 <sup>259</sup>	41.74 <sup>316</sup>
15.9	51.071 <sup>282</sup>	23.27 <sup>258</sup>	29.130 <sup>289</sup>	31.79 <sup>284</sup>	56.901 <sup>303</sup>	38.58 <sup>296</sup>
25.8	51.353 <sup>306</sup>	20.69 <sup>242</sup>	29.419 <sup>318</sup>	28.95 <sup>259</sup>	57.204 <sup>336</sup>	35.62 <sup>266</sup>
35.8	51.659	18.27	29.737	26.36	57.540	32.96
Mean Place	49.654	36.77	28.140	47.35	56.285	55.81
Sec δ, Tan δ	1.061	+0.355	1.163	+0.594	1.280	+0.800
L α, L δ	-0.01	-0.3	-0.01	-0.3	-0.01	-0.3
ω α, ω δ	+0.02	-0.6	+0.03	-0.6	+0.04	-0.6

AUTHORITY

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# APPARENT PLACES OF STARS, 1922. 369

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\eta$ Centauri. Mag. 2·7		$\alpha$ Centauri. Mag. 0·3		$\alpha$ Circini. Mag. 3·4	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 14 <sup>m</sup> 30	<sup>°</sup> 41 <sup>'</sup> 48	<sup>h</sup> 14 <sup>m</sup> 34	<sup>°</sup> 60 <sup>'</sup> 30	<sup>h</sup> 14 <sup>m</sup> 36	<sup>°</sup> 64 <sup>'</sup> 37
Jan. 0·8	32·752 <sup>398</sup>	42·19 <sup>81</sup>	17·94 <sup>56</sup>	27·57 <sup>22</sup>	10·85 <sup>63</sup>	51·46 <sup>0</sup>
10·8	33·150 <sup>407</sup>	43·00 <sup>113</sup>	18·50 <sup>56</sup>	27·79 <sup>73</sup>	11·48 <sup>64</sup>	51·46 <sup>50</sup>
20·8	33·557 <sup>402</sup>	44·13 <sup>142</sup>	19·06 <sup>56</sup>	28·52 <sup>117</sup>	12·12 <sup>65</sup>	51·96 <sup>98</sup>
30·8	33·959 <sup>389</sup>	45·55 <sup>165</sup>	19·62 <sup>55</sup>	29·69 <sup>156</sup>	12·77 <sup>63</sup>	52·94 <sup>142</sup>
Feb. 9·7	34·348 <sup>366</sup>	47·20 <sup>186</sup>	20·17 <sup>51</sup>	31·25 <sup>193</sup>	13·40 <sup>60</sup>	54·36 <sup>181</sup>
19·7	34·714 <sup>337</sup>	49·06 <sup>199</sup>	20·68 <sup>47</sup>	33·18 <sup>219</sup>	14·00 <sup>56</sup>	56·17 <sup>215</sup>
Mar. 1·7	35·051 <sup>306</sup>	51·05 <sup>207</sup>	21·15 <sup>42</sup>	35·37 <sup>245</sup>	14·56 <sup>50</sup>	58·32 <sup>242</sup>
11·6	35·357 <sup>269</sup>	53·12 <sup>209</sup>	21·57 <sup>37</sup>	37·82 <sup>261</sup>	15·06 <sup>45</sup>	60·74 <sup>264</sup>
21·6	35·626 <sup>230</sup>	55·21 <sup>211</sup>	21·94 <sup>31</sup>	40·43 <sup>272</sup>	15·51 <sup>38</sup>	63·38 <sup>280</sup>
31·6	35·856 <sup>192</sup>	57·32 <sup>204</sup>	22·25 <sup>25</sup>	43·15 <sup>279</sup>	15·89 <sup>32</sup>	66·18 <sup>289</sup>
Apr. 10·6	36·048 <sup>153</sup>	59·36 <sup>197</sup>	22·50 <sup>19</sup>	45·94 <sup>278</sup>	16·21 <sup>25</sup>	69·07 <sup>292</sup>
20·5	36·201 <sup>116</sup>	61·33 <sup>188</sup>	22·69 <sup>13</sup>	48·72 <sup>270</sup>	16·46 <sup>18</sup>	71·99 <sup>291</sup>
30·5	36·317 <sup>76</sup>	63·21 <sup>173</sup>	22·82 <sup>7</sup>	51·42 <sup>262</sup>	16·64 <sup>11</sup>	74·90 <sup>282</sup>
May 10·5	36·393 <sup>37</sup>	64·94 <sup>160</sup>	22·89 <sup>0</sup>	54·04 <sup>243</sup>	16·75 <sup>3</sup>	77·72 <sup>269</sup>
20·5	36·430 <sup>1</sup>	66·54 <sup>139</sup>	22·89 <sup>5</sup>	56·47 <sup>224</sup>	16·78 <sup>3</sup>	80·41 <sup>249</sup>
30·4	36·429 <sup>37</sup>	67·93 <sup>118</sup>	22·84 <sup>12</sup>	58·71 <sup>197</sup>	16·75 <sup>11</sup>	82·90 <sup>224</sup>
June 9·4	36·392 <sup>75</sup>	69·11 <sup>96</sup>	22·72 <sup>17</sup>	60·68 <sup>167</sup>	16·64 <sup>17</sup>	85·14 <sup>195</sup>
19·4	36·317 <sup>106</sup>	70·07 <sup>68</sup>	22·55 <sup>22</sup>	62·35 <sup>133</sup>	16·47 <sup>24</sup>	87·09 <sup>159</sup>
29·3	36·211 <sup>140</sup>	70·75 <sup>43</sup>	22·33 <sup>27</sup>	63·68 <sup>94</sup>	16·23 <sup>30</sup>	88·68 <sup>121</sup>
July 9·3	36·071 <sup>165</sup>	71·18 <sup>13</sup>	22·06 <sup>30</sup>	64·62 <sup>55</sup>	15·93 <sup>34</sup>	89·89 <sup>78</sup>
19·3	35·906 <sup>188</sup>	71·31 <sup>16</sup>	21·76 <sup>34</sup>	65·17 <sup>10</sup>	15·59 <sup>38</sup>	90·67 <sup>33</sup>
29·3	35·718 <sup>202</sup>	71·15 <sup>48</sup>	21·42 <sup>36</sup>	65·27 <sup>34</sup>	15·21 <sup>40</sup>	91·00 <sup>14</sup>
Aug. 8·2	35·516 <sup>211</sup>	70·67 <sup>76</sup>	21·06 <sup>36</sup>	64·93 <sup>77</sup>	14·81 <sup>41</sup>	90·86 <sup>60</sup>
18·2	35·305 <sup>206</sup>	69·91 <sup>103</sup>	20·70 <sup>35</sup>	64·16 <sup>115</sup>	14·40 <sup>41</sup>	90·26 <sup>106</sup>
28·2	35·099 <sup>194</sup>	68·88 <sup>125</sup>	20·35 <sup>33</sup>	63·01 <sup>155</sup>	13·99 <sup>38</sup>	89·20 <sup>148</sup>
Sept. 7·2	34·905 <sup>171</sup>	67·63 <sup>145</sup>	20·02 <sup>28</sup>	61·46 <sup>191</sup>	13·61 <sup>34</sup>	87·72 <sup>186</sup>
17·1	34·734 <sup>137</sup>	66·18 <sup>158</sup>	19·74 <sup>24</sup>	59·55 <sup>216</sup>	13·27 <sup>27</sup>	85·86 <sup>216</sup>
27·1	34·597 <sup>92</sup>	64·60 <sup>165</sup>	19·50 <sup>16</sup>	57·39 <sup>233</sup>	13·00 <sup>20</sup>	83·70 <sup>240</sup>
Oct. 7·1	34·505 <sup>40</sup>	62·95 <sup>166</sup>	19·34 <sup>9</sup>	55·06 <sup>242</sup>	12·80 <sup>11</sup>	81·30 <sup>254</sup>
17·0	34·465 <sup>20</sup>	61·29 <sup>156</sup>	19·25 <sup>1</sup>	52·64 <sup>242</sup>	12·69 <sup>1</sup>	78·76 <sup>257</sup>
27·0	34·485 <sup>82</sup>	59·73 <sup>140</sup>	19·26 <sup>10</sup>	50·22 <sup>234</sup>	12·68 <sup>10</sup>	76·19 <sup>251</sup>
Nov. 6·0	34·567 <sup>150</sup>	58·33 <sup>117</sup>	19·36 <sup>20</sup>	47·88 <sup>210</sup>	12·78 <sup>20</sup>	73·68 <sup>232</sup>
16·0	34·717 <sup>213</sup>	57·16 <sup>87</sup>	19·56 <sup>28</sup>	45·78 <sup>183</sup>	12·98 <sup>31</sup>	71·36 <sup>206</sup>
25·9	34·930 <sup>269</sup>	56·29 <sup>54</sup>	19·84 <sup>37</sup>	43·95 <sup>143</sup>	13·29 <sup>41</sup>	69·30 <sup>170</sup>
Dec. 5·9	35·199 <sup>320</sup>	55·75 <sup>18</sup>	20·21 <sup>44</sup>	42·52 <sup>103</sup>	13·70 <sup>49</sup>	67·60 <sup>127</sup>
15·9	35·519 <sup>358</sup>	55·57 <sup>20</sup>	20·65 <sup>49</sup>	41·49 <sup>55</sup>	14·19 <sup>55</sup>	66·33 <sup>81</sup>
25·9	35·877 <sup>387</sup>	55·77 <sup>60</sup>	21·14 <sup>53</sup>	40·94 <sup>3</sup>	14·74 <sup>61</sup>	65·52 <sup>29</sup>
35·8	36·264	56·37	21·67	40·91	15·35	65·23
Mean Place	32·817	57·49	17·34	51·50	10·93	71·44
Sec $\delta$ , Tan $\delta$	1·342	—0·895	2·032	—1·769	2·334	—2·109
L $\alpha$ , L $\delta$	+0·01	—0·3	+0·03	—0·3	+0·03	—0·3
$\omega$ $\alpha$ , $\omega$ $\delta$	—0·05	—0·6	—0·09	—0·6	—0·11	—0·6
AUTHORITY	A. E.		A. E.		A. N.	

# 370 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Lupi. Mag. 2.9		$\epsilon$ Boötis. Mag. 2.7		$\alpha$ Libræ. Mag. 2.9	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 14 <sup>m</sup> 36	<sup>°</sup> 47 <sup>'</sup> 2	<sup>h</sup> 14 <sup>m</sup> 41	<sup>°</sup> 27 <sup>'</sup> 23	<sup>h</sup> 14 <sup>m</sup> 46	<sup>°</sup> 15 <sup>'</sup> 42
Jan. 0.8	43.891 <sup>s</sup> <sub>426</sub>	59.32 <sup>"</sup> <sub>56</sub>	34.036 <sup>s</sup> <sub>316</sub>	63.73 <sup>"</sup> <sub>241</sub>	33.264 <sup>s</sup> <sub>316</sub>	58.26 <sup>"</sup> <sub>151</sub>
10.8	44.317 <sup>s</sup> <sub>437</sub>	59.88 <sup>"</sup> <sub>93</sub>	34.352 <sup>s</sup> <sub>331</sub>	61.32 <sup>"</sup> <sub>205</sub>	33.580 <sup>s</sup> <sub>325</sub>	59.77 <sup>"</sup> <sub>156</sub>
20.8	44.754 <sup>s</sup> <sub>434</sub>	60.81 <sup>"</sup> <sub>128</sub>	34.683 <sup>s</sup> <sub>333</sub>	59.27 <sup>"</sup> <sub>164</sub>	33.905 <sup>s</sup> <sub>325</sub>	61.33 <sup>"</sup> <sub>160</sub>
30.8	45.188 <sup>s</sup> <sub>422</sub>	62.09 <sup>"</sup> <sub>157</sub>	35.016 <sup>s</sup> <sub>326</sub>	57.63 <sup>"</sup> <sub>117</sub>	34.230 <sup>s</sup> <sub>315</sub>	62.93 <sup>"</sup> <sub>156</sub>
Feb. 9.7	45.610 <sup>s</sup> <sub>398</sub>	63.66 <sup>"</sup> <sub>181</sub>	35.342 <sup>s</sup> <sub>311</sub>	56.46 <sup>"</sup> <sub>66</sub>	34.545 <sup>s</sup> <sub>301</sub>	64.49 <sup>"</sup> <sub>147</sub>
19.7	46.008 <sup>s</sup> <sub>370</sub>	65.47 <sup>"</sup> <sub>199</sub>	35.653 <sup>s</sup> <sub>287</sub>	55.80 <sup>"</sup> <sub>14</sub>	34.846 <sup>s</sup> <sub>282</sub>	65.96 <sup>"</sup> <sub>131</sub>
Mar. 1.7	46.378 <sup>s</sup> <sub>335</sub>	67.46 <sup>"</sup> <sub>213</sub>	35.940 <sup>s</sup> <sub>259</sub>	55.66 <sup>"</sup> <sub>36</sub>	35.128 <sup>s</sup> <sub>254</sub>	67.27 <sup>"</sup> <sub>120</sub>
11.6	46.713 <sup>s</sup> <sub>298</sub>	69.59 <sup>"</sup> <sub>221</sub>	36.199 <sup>s</sup> <sub>227</sub>	56.02 <sup>"</sup> <sub>83</sub>	35.382 <sup>s</sup> <sub>227</sub>	68.47 <sup>"</sup> <sub>102</sub>
21.6	47.011 <sup>s</sup> <sub>257</sub>	71.80 <sup>"</sup> <sub>225</sub>	36.426 <sup>s</sup> <sub>192</sub>	56.85 <sup>"</sup> <sub>124</sub>	35.609 <sup>s</sup> <sub>195</sub>	69.49 <sup>"</sup> <sub>83</sub>
31.6	47.268 <sup>s</sup> <sub>215</sub>	74.05 <sup>"</sup> <sub>225</sub>	36.618 <sup>s</sup> <sub>155</sub>	58.09 <sup>"</sup> <sub>159</sub>	35.804 <sup>s</sup> <sub>170</sub>	70.32 <sup>"</sup> <sub>69</sub>
Apr. 10.6	47.483 <sup>s</sup> <sub>174</sub>	76.30 <sup>"</sup> <sub>220</sub>	36.773 <sup>s</sup> <sub>120</sub>	59.68 <sup>"</sup> <sub>185</sub>	35.974 <sup>s</sup> <sub>136</sub>	71.01 <sup>"</sup> <sub>49</sub>
20.5	47.657 <sup>s</sup> <sub>131</sub>	78.50 <sup>"</sup> <sub>212</sub>	36.893 <sup>s</sup> <sub>84</sub>	61.53 <sup>"</sup> <sub>204</sub>	36.110 <sup>s</sup> <sub>110</sub>	71.50 <sup>"</sup> <sub>32</sub>
30.5	47.788 <sup>s</sup> <sub>88</sub>	80.62 <sup>"</sup> <sub>201</sub>	36.977 <sup>s</sup> <sub>49</sub>	63.57 <sup>"</sup> <sub>214</sub>	36.220 <sup>s</sup> <sub>78</sub>	71.82 <sup>"</sup> <sub>21</sub>
May 10.5	47.876 <sup>s</sup> <sub>46</sub>	82.63 <sup>"</sup> <sub>186</sub>	37.026 <sup>s</sup> <sub>16</sub>	65.71 <sup>"</sup> <sub>217</sub>	36.298 <sup>s</sup> <sub>50</sub>	72.03 <sup>"</sup> <sub>7</sub>
20.5	47.922 <sup>s</sup> <sub>3</sub>	84.49 <sup>"</sup> <sub>167</sub>	37.042 <sup>s</sup> <sub>16</sub>	67.88 <sup>"</sup> <sub>211</sub>	36.348 <sup>s</sup> <sub>20</sub>	72.10 <sup>"</sup> <sub>3</sub>
30.4	47.925 <sup>s</sup> <sub>39</sub>	86.16 <sup>"</sup> <sub>146</sub>	37.026 <sup>s</sup> <sub>47</sub>	69.99 <sup>"</sup> <sub>198</sub>	36.368 <sup>s</sup> <sub>6</sub>	72.07 <sup>"</sup> <sub>10</sub>
June 9.4	47.886 <sup>s</sup> <sub>80</sub>	87.62 <sup>"</sup> <sub>121</sub>	36.979 <sup>s</sup> <sub>75</sub>	71.97 <sup>"</sup> <sub>181</sub>	36.362 <sup>s</sup> <sub>36</sub>	71.97 <sup>"</sup> <sub>22</sub>
19.4	47.806 <sup>s</sup> <sub>119</sub>	88.83 <sup>"</sup> <sub>94</sub>	36.904 <sup>s</sup> <sub>101</sub>	73.78 <sup>"</sup> <sub>159</sub>	36.326 <sup>s</sup> <sub>62</sub>	71.75 <sup>"</sup> <sub>29</sub>
29.3	47.687 <sup>s</sup> <sub>153</sub>	89.77 <sup>"</sup> <sub>64</sub>	36.803 <sup>s</sup> <sub>125</sub>	75.37 <sup>"</sup> <sub>131</sub>	36.264 <sup>s</sup> <sub>88</sub>	71.46 <sup>"</sup> <sub>37</sub>
July 9.3	47.534 <sup>s</sup> <sub>186</sub>	90.41 <sup>"</sup> <sub>31</sub>	36.678 <sup>s</sup> <sub>146</sub>	76.68 <sup>"</sup> <sub>101</sub>	36.176 <sup>s</sup> <sub>111</sub>	71.09 <sup>"</sup> <sub>42</sub>
19.3	47.348 <sup>s</sup> <sub>210</sub>	90.72 <sup>"</sup> <sub>2</sub>	36.532 <sup>s</sup> <sub>162</sub>	77.69 <sup>"</sup> <sub>69</sub>	36.065 <sup>s</sup> <sub>132</sub>	70.67 <sup>"</sup> <sub>48</sub>
29.3	47.138 <sup>s</sup> <sub>227</sub>	90.70 <sup>"</sup> <sub>36</sub>	36.370 <sup>s</sup> <sub>173</sub>	78.38 <sup>"</sup> <sub>35</sub>	35.933 <sup>s</sup> <sub>143</sub>	70.19 <sup>"</sup> <sub>50</sub>
Aug. 8.2	46.911 <sup>s</sup> <sub>236</sub>	90.34 <sup>"</sup> <sub>69</sub>	36.197 <sup>s</sup> <sub>180</sub>	78.73 <sup>"</sup> <sub>0</sub>	35.790 <sup>s</sup> <sub>154</sub>	69.69 <sup>"</sup> <sub>55</sub>
18.2	46.675 <sup>s</sup> <sub>234</sub>	89.65 <sup>"</sup> <sub>101</sub>	36.017 <sup>s</sup> <sub>179</sub>	78.73 <sup>"</sup> <sub>36</sub>	35.636 <sup>s</sup> <sub>154</sub>	69.14 <sup>"</sup> <sub>58</sub>
28.2	46.441 <sup>s</sup> <sub>221</sub>	88.64 <sup>"</sup> <sub>130</sub>	35.838 <sup>s</sup> <sub>172</sub>	78.37 <sup>"</sup> <sub>71</sub>	35.482 <sup>s</sup> <sub>149</sub>	68.56 <sup>"</sup> <sub>57</sub>
Sept. 7.2	46.220 <sup>s</sup> <sub>197</sub>	87.34 <sup>"</sup> <sub>153</sub>	35.666 <sup>s</sup> <sub>156</sub>	77.66 <sup>"</sup> <sub>107</sub>	35.333 <sup>s</sup> <sub>136</sub>	67.99 <sup>"</sup> <sub>55</sub>
17.1	46.023 <sup>s</sup> <sub>160</sub>	85.81 <sup>"</sup> <sub>172</sub>	35.510 <sup>s</sup> <sub>133</sub>	76.59 <sup>"</sup> <sub>142</sub>	35.197 <sup>s</sup> <sub>112</sub>	67.44 <sup>"</sup> <sub>48</sub>
27.1	45.863 <sup>s</sup> <sub>112</sub>	84.09 <sup>"</sup> <sub>184</sub>	35.377 <sup>s</sup> <sub>102</sub>	75.17 <sup>"</sup> <sub>174</sub>	35.085 <sup>s</sup> <sub>83</sub>	66.96 <sup>"</sup> <sub>37</sub>
Oct. 7.1	45.751 <sup>s</sup> <sub>55</sub>	82.25 <sup>"</sup> <sub>187</sub>	35.275 <sup>s</sup> <sub>62</sub>	73.43 <sup>"</sup> <sub>206</sub>	35.002 <sup>s</sup> <sub>40</sub>	66.59 <sup>"</sup> <sub>27</sub>
17.0	45.696 <sup>s</sup> <sub>10</sub>	80.38 <sup>"</sup> <sub>182</sub>	35.213 <sup>s</sup> <sub>17</sub>	71.37 <sup>"</sup> <sub>234</sub>	34.962 <sup>s</sup> <sub>1</sub>	66.32 <sup>"</sup> <sub>7</sub>
27.0	45.706 <sup>s</sup> <sub>80</sub>	78.56 <sup>"</sup> <sub>170</sub>	35.196 <sup>s</sup> <sub>33</sub>	69.03 <sup>"</sup> <sub>258</sub>	34.963 <sup>s</sup> <sub>54</sub>	66.25 <sup>"</sup> <sub>11</sub>
Nov. 6.0	45.786 <sup>s</sup> <sub>150</sub>	76.86 <sup>"</sup> <sub>148</sub>	35.229 <sup>s</sup> <sub>86</sub>	66.45 <sup>"</sup> <sub>278</sub>	35.017 <sup>s</sup> <sub>103</sub>	66.36 <sup>"</sup> <sub>36</sub>
16.0	45.936 <sup>s</sup> <sub>219</sub>	75.38 <sup>"</sup> <sub>121</sub>	35.315 <sup>s</sup> <sub>139</sub>	63.67 <sup>"</sup> <sub>290</sub>	35.120 <sup>s</sup> <sub>155</sub>	66.72 <sup>"</sup> <sub>63</sub>
25.9	46.155 <sup>s</sup> <sub>283</sub>	74.17 <sup>"</sup> <sub>86</sub>	35.454 <sup>s</sup> <sub>189</sub>	60.77 <sup>"</sup> <sub>296</sub>	35.275 <sup>s</sup> <sub>203</sub>	67.35 <sup>"</sup> <sub>84</sub>
Dec. 5.9	46.438 <sup>s</sup> <sub>337</sub>	73.31 <sup>"</sup> <sub>48</sub>	35.643 <sup>s</sup> <sub>235</sub>	57.81 <sup>"</sup> <sub>293</sub>	35.478 <sup>s</sup> <sub>246</sub>	68.19 <sup>"</sup> <sub>107</sub>
15.9	46.775 <sup>s</sup> <sub>381</sub>	72.83 <sup>"</sup> <sub>8</sub>	35.878 <sup>s</sup> <sub>275</sub>	54.88 <sup>"</sup> <sub>281</sub>	35.724 <sup>s</sup> <sub>280</sub>	69.26 <sup>"</sup> <sub>127</sub>
25.9	47.156 <sup>s</sup> <sub>412</sub>	72.75 <sup>"</sup> <sub>33</sub>	36.153 <sup>s</sup> <sub>304</sub>	52.07 <sup>"</sup> <sub>260</sub>	36.004 <sup>s</sup> <sub>303</sub>	70.53 <sup>"</sup> <sub>145</sub>
35.8	47.568 <sup>s</sup>	73.08 <sup>"</sup>	36.457 <sup>s</sup>	49.47 <sup>"</sup>	36.307 <sup>s</sup>	71.98 <sup>"</sup>
Mean Place	43.984	75.90	34.836	68.26	33.580	66.53
Sec $\delta$ , Tan $\delta$	1.468	-1.074	1.126	+0.518	1.039	-0.281
L $\alpha$ , L $\delta$	+0.02	-0.3	-0.01	-0.3	0.00	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.06	-0.6	+0.03	-0.6	-0.01	-0.7
AUTHORITY	A. N.				A. E.	



# APPARENT PLACES OF STARS, 1922. 371

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Ursæ Minoris. Mag. 2.2		$\xi^2$ Libræ. Mag. 5.6		$\beta$ Lupi. Mag. 2.8	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 14 50	<sup>°</sup> 74 28	<sup>h</sup> <sup>m</sup> 14 52	<sup>°</sup> 11 5	<sup>h</sup> <sup>m</sup> 14 53	<sup>°</sup> 42 48
Jan. 0.8	50.56 <sup>s</sup>	15.51 <sup>°</sup> 232	31.556 <sup>s</sup> 308	37.66 <sup>°</sup> 161	24.506 <sup>s</sup> 394	59.61 <sup>°</sup> 53
10.8	51.31 <sup>s</sup> 83	13.19 <sup>°</sup> 174	31.864 <sup>s</sup> 318	39.27 <sup>°</sup> 163	24.900 <sup>s</sup> 409	60.14 <sup>°</sup> 86
20.8	52.14 <sup>s</sup> 88	11.45 <sup>°</sup> 110	32.182 <sup>s</sup> 320	40.90 <sup>°</sup> 161	25.309 <sup>s</sup> 409	61.00 <sup>°</sup> 116
30.8	53.02 <sup>s</sup> 88	10.35 <sup>°</sup> 43	32.502 <sup>s</sup> 312	42.51 <sup>°</sup> 153	25.718 <sup>s</sup> 401	62.16 <sup>°</sup> 141
Feb. 9.7	53.90 <sup>s</sup> 87	9.92 <sup>°</sup> 24	32.814 <sup>s</sup> 297	44.04 <sup>°</sup> 138	26.119 <sup>s</sup> 384	63.57 <sup>°</sup> 161
19.7	54.77 <sup>s</sup> 81	10.16 <sup>°</sup> 92	33.111 <sup>s</sup> 277	45.42 <sup>°</sup> 122	26.503 <sup>s</sup> 359	65.18 <sup>°</sup> 178
Mar. 1.7	55.58 <sup>s</sup> 74	11.08 <sup>°</sup> 152	33.388 <sup>s</sup> 253	46.64 <sup>°</sup> 101	26.862 <sup>s</sup> 328	66.96 <sup>°</sup> 187
11.6	56.32 <sup>s</sup> 64	12.60 <sup>°</sup> 209	33.641 <sup>s</sup> 226	47.65 <sup>°</sup> 80	27.190 <sup>s</sup> 297	68.83 <sup>°</sup> 195
21.6	56.96 <sup>s</sup> 52	14.69 <sup>°</sup> 253	33.867 <sup>s</sup> 198	48.45 <sup>°</sup> 60	27.487 <sup>s</sup> 263	70.78 <sup>°</sup> 197
31.6	57.48 <sup>s</sup> 39	17.22 <sup>°</sup> 288	34.065 <sup>s</sup> 169	49.05 <sup>°</sup> 39	27.750 <sup>s</sup> 224	72.75 <sup>°</sup> 196
Apr. 10.6	57.87 <sup>s</sup> 26	20.10 <sup>°</sup> 309	34.234 <sup>s</sup> 141	49.44 <sup>°</sup> 20	27.974 <sup>s</sup> 184	74.71 <sup>°</sup> 193
20.5	58.13 <sup>s</sup> 11	23.19 <sup>°</sup> 323	34.375 <sup>s</sup> 111	49.64 <sup>°</sup> 4	28.158 <sup>s</sup> 148	76.64 <sup>°</sup> 185
30.5	58.24 <sup>s</sup> 4	26.42 <sup>°</sup> 322	34.486 <sup>s</sup> 83	49.68 <sup>°</sup> 9	28.306 <sup>s</sup> 108	78.49 <sup>°</sup> 176
May 10.5	58.20 <sup>s</sup> 16	29.64 <sup>°</sup> 312	34.569 <sup>s</sup> 54	49.59 <sup>°</sup> 21	28.414 <sup>s</sup> 67	80.25 <sup>°</sup> 164
20.5	58.04 <sup>s</sup> 30	32.76 <sup>°</sup> 291	34.623 <sup>s</sup> 26	49.38 <sup>°</sup> 30	28.481 <sup>s</sup> 28	81.89 <sup>°</sup> 147
30.4	57.74 <sup>s</sup> 40	35.67 <sup>°</sup> 262	34.649 <sup>s</sup> 3	49.08 <sup>°</sup> 37	28.509 <sup>s</sup> 12	83.36 <sup>°</sup> 129
June 9.4	57.34 <sup>s</sup> 52	38.29 <sup>°</sup> 224	34.646 <sup>s</sup> 31	48.71 <sup>°</sup> 43	28.497 <sup>s</sup> 52	84.65 <sup>°</sup> 110
19.4	56.82 <sup>s</sup> 59	40.53 <sup>°</sup> 182	34.615 <sup>s</sup> 57	48.28 <sup>°</sup> 46	28.445 <sup>s</sup> 93	85.75 <sup>°</sup> 86
29.3	56.23 <sup>s</sup> 67	42.35 <sup>°</sup> 135	34.558 <sup>s</sup> 83	47.82 <sup>°</sup> 49	28.352 <sup>s</sup> 125	86.61 <sup>°</sup> 59
July 9.3	55.56 <sup>s</sup> 73	43.70 <sup>°</sup> 83	34.475 <sup>s</sup> 106	47.33 <sup>°</sup> 51	28.227 <sup>s</sup> 158	87.20 <sup>°</sup> 35
19.3	54.83 <sup>s</sup> 77	44.53 <sup>°</sup> 30	34.369 <sup>s</sup> 126	46.82 <sup>°</sup> 52	28.069 <sup>s</sup> 186	87.55 <sup>°</sup> 3
29.3	54.06 <sup>s</sup> 78	44.83 <sup>°</sup> 22	34.243 <sup>s</sup> 141	46.30 <sup>°</sup> 53	27.883 <sup>s</sup> 204	87.58 <sup>°</sup> 24
Aug. 8.2	53.28 <sup>s</sup> 78	44.61 <sup>°</sup> 77	34.102 <sup>s</sup> 151	45.77 <sup>°</sup> 51	27.679 <sup>s</sup> 217	87.34 <sup>°</sup> 55
18.2	52.50 <sup>s</sup> 77	43.84 <sup>°</sup> 127	33.951 <sup>s</sup> 154	45.26 <sup>°</sup> 49	27.462 <sup>s</sup> 219	86.79 <sup>°</sup> 84
28.2	51.73 <sup>s</sup> 73	42.57 <sup>°</sup> 177	33.797 <sup>s</sup> 149	44.77 <sup>°</sup> 44	27.243 <sup>s</sup> 214	85.95 <sup>°</sup> 109
Sept. 7.2	51.00 <sup>s</sup> 68	40.80 <sup>°</sup> 222	33.648 <sup>s</sup> 137	44.33 <sup>°</sup> 37	27.029 <sup>s</sup> 192	84.86 <sup>°</sup> 131
17.1	50.32 <sup>s</sup> 60	38.58 <sup>°</sup> 263	33.511 <sup>s</sup> 115	43.96 <sup>°</sup> 28	26.837 <sup>s</sup> 161	83.55 <sup>°</sup> 148
27.1	49.72 <sup>s</sup> 51	35.95 <sup>°</sup> 304	33.396 <sup>s</sup> 86	43.68 <sup>°</sup> 15	26.676 <sup>s</sup> 120	82.07 <sup>°</sup> 159
Oct. 7.1	49.21 <sup>s</sup> 40	32.91 <sup>°</sup> 334	33.310 <sup>s</sup> 48	43.53 <sup>°</sup> 1	26.556 <sup>s</sup> 67	80.48 <sup>°</sup> 162
17.0	48.81 <sup>s</sup> 28	29.57 <sup>°</sup> 356	33.262 <sup>s</sup> 3	43.54 <sup>°</sup> 18	26.489 <sup>s</sup> 12	78.86 <sup>°</sup> 160
27.0	48.53 <sup>s</sup> 13	26.01 <sup>°</sup> 376	33.259 <sup>s</sup> 44	43.72 <sup>°</sup> 41	26.477 <sup>s</sup> 56	77.26 <sup>°</sup> 148
Nov. 6.0	48.40 <sup>s</sup> 0	22.25 <sup>°</sup> 383	33.303 <sup>s</sup> 95	44.13 <sup>°</sup> 62	26.533 <sup>s</sup> 121	75.78 <sup>°</sup> 129
16.0	48.40 <sup>s</sup> 16	18.42 <sup>°</sup> 379	33.398 <sup>s</sup> 146	44.75 <sup>°</sup> 86	26.654 <sup>s</sup> 187	74.49 <sup>°</sup> 106
25.9	48.56 <sup>s</sup> 31	14.63 <sup>°</sup> 368	33.544 <sup>s</sup> 194	45.61 <sup>°</sup> 109	26.841 <sup>s</sup> 248	73.43 <sup>°</sup> 73
Dec. 5.9	48.87 <sup>s</sup> 46	10.95 <sup>°</sup> 344	33.738 <sup>s</sup> 235	46.70 <sup>°</sup> 129	27.089 <sup>s</sup> 301	72.70 <sup>°</sup> 41
15.9	49.33 <sup>s</sup> 59	7.51 <sup>°</sup> 311	33.973 <sup>s</sup> 271	47.99 <sup>°</sup> 146	27.390 <sup>s</sup> 347	72.29 <sup>°</sup> 5
25.9	49.92 <sup>s</sup> 70	4.40 <sup>°</sup> 268	34.244 <sup>s</sup> 297	49.45 <sup>°</sup> 158	27.737 <sup>s</sup> 380	72.24 <sup>°</sup> 33
35.8	50.62 <sup>s</sup>	1.72 <sup>°</sup>	34.541 <sup>s</sup>	51.03 <sup>°</sup>	28.117 <sup>s</sup>	72.57 <sup>°</sup>
Mean Place	55.06	27.21	31.936	44.71	24.753	75.29
Sec $\delta$ , Tan $\delta$	3.735	+3.598	1.019	-0.196	1.363	-0.927
L $\alpha$ , L $\delta$	-0.06	-0.3	0.00	-0.3	+0.02	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.18	-0.7	-0.01	-0.7	-0.04	-0.7
AUTHORITY	A. E.				A. E.	

## 372 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\kappa$ Centauri. Mag. 3.4		$\beta$ Boötis. Mag. 3.6		$\gamma$ Scorpii. Mag. 3.4	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 14 <sup>m</sup> 54 <sup>s</sup>	<sup>°</sup> 41 <sup>'</sup> 47 <sup>"</sup>	<sup>h</sup> 14 <sup>m</sup> 58 <sup>s</sup>	<sup>°</sup> 40 <sup>'</sup> 41 <sup>"</sup>	<sup>h</sup> 14 <sup>m</sup> 59 <sup>s</sup>	<sup>°</sup> 24 <sup>'</sup> 58 <sup>"</sup>
Jan. 0.8	4.517 <sup>390</sup>	16.54 <sup>56</sup>	59.262 <sup>338</sup>	44.50 <sup>260</sup>	29.703 <sup>329</sup>	23.36 <sup>110</sup>
10.8	4.907 <sup>402</sup>	17.10 <sup>87</sup>	59.600 <sup>357</sup>	41.90 <sup>215</sup>	30.032 <sup>340</sup>	24.46 <sup>128</sup>
20.8	5.309 <sup>404</sup>	17.97 <sup>117</sup>	59.957 <sup>365</sup>	39.75 <sup>169</sup>	30.372 <sup>342</sup>	25.74 <sup>138</sup>
30.8	5.713 <sup>395</sup>	19.14 <sup>141</sup>	60.322 <sup>366</sup>	38.06 <sup>109</sup>	30.714 <sup>334</sup>	27.12 <sup>148</sup>
Feb. 9.7	6.108 <sup>378</sup>	20.55 <sup>161</sup>	60.688 <sup>356</sup>	36.97 <sup>51</sup>	31.048 <sup>322</sup>	28.60 <sup>150</sup>
19.7	6.486 <sup>354</sup>	22.16 <sup>175</sup>	61.044 <sup>332</sup>	36.46 <sup>10</sup>	31.370 <sup>301</sup>	30.10 <sup>144</sup>
Mar. 1.7	6.840 <sup>326</sup>	23.91 <sup>185</sup>	61.376 <sup>304</sup>	36.56 <sup>70</sup>	31.671 <sup>278</sup>	31.54 <sup>139</sup>
11.7	7.166 <sup>292</sup>	25.76 <sup>191</sup>	61.680 <sup>269</sup>	37.26 <sup>120</sup>	31.949 <sup>250</sup>	32.93 <sup>131</sup>
21.6	7.458 <sup>257</sup>	27.67 <sup>193</sup>	61.949 <sup>233</sup>	38.46 <sup>169</sup>	32.199 <sup>222</sup>	34.24 <sup>122</sup>
31.6	7.715 <sup>222</sup>	29.60 <sup>191</sup>	62.182 <sup>186</sup>	40.15 <sup>209</sup>	32.421 <sup>191</sup>	35.46 <sup>109</sup>
Apr. 10.6	7.937 <sup>184</sup>	31.51 <sup>186</sup>	62.368 <sup>146</sup>	42.24 <sup>236</sup>	32.612 <sup>160</sup>	36.55 <sup>96</sup>
20.5	8.121 <sup>147</sup>	33.37 <sup>180</sup>	62.514 <sup>103</sup>	44.60 <sup>256</sup>	32.772 <sup>132</sup>	37.51 <sup>85</sup>
30.5	8.268 <sup>107</sup>	35.17 <sup>169</sup>	62.617 <sup>57</sup>	47.16 <sup>269</sup>	32.904 <sup>98</sup>	38.36 <sup>72</sup>
May 10.5	8.375 <sup>69</sup>	36.86 <sup>158</sup>	62.674 <sup>17</sup>	49.85 <sup>270</sup>	33.002 <sup>66</sup>	39.08 <sup>59</sup>
20.5	8.444 <sup>29</sup>	38.44 <sup>142</sup>	62.691 <sup>23</sup>	52.55 <sup>262</sup>	33.068 <sup>37</sup>	39.67 <sup>49</sup>
30.4	8.473 <sup>10</sup>	39.86 <sup>124</sup>	62.668 <sup>62</sup>	55.17 <sup>245</sup>	33.105 <sup>1</sup>	40.16 <sup>35</sup>
June 9.4	8.463 <sup>50</sup>	41.10 <sup>105</sup>	62.606 <sup>100</sup>	57.62 <sup>220</sup>	33.106 <sup>26</sup>	40.51 <sup>28</sup>
19.4	8.413 <sup>86</sup>	42.15 <sup>82</sup>	62.506 <sup>131</sup>	59.82 <sup>193</sup>	33.080 <sup>59</sup>	40.79 <sup>10</sup>
29.4	8.327 <sup>123</sup>	42.97 <sup>57</sup>	62.375 <sup>161</sup>	61.75 <sup>159</sup>	33.021 <sup>87</sup>	40.89 <sup>3</sup>
July 9.3	8.204 <sup>154</sup>	43.54 <sup>31</sup>	62.214 <sup>187</sup>	63.34 <sup>119</sup>	32.934 <sup>115</sup>	40.86 <sup>13</sup>
19.3	8.050 <sup>180</sup>	43.85 <sup>2</sup>	62.027 <sup>208</sup>	64.53 <sup>78</sup>	32.819 <sup>137</sup>	40.73 <sup>28</sup>
29.3	7.870 <sup>201</sup>	43.87 <sup>26</sup>	61.819 <sup>220</sup>	65.31 <sup>38</sup>	32.682 <sup>156</sup>	40.45 <sup>41</sup>
Aug. 8.2	7.669 <sup>213</sup>	43.61 <sup>55</sup>	61.599 <sup>231</sup>	65.69 <sup>8</sup>	32.526 <sup>166</sup>	40.04 <sup>53</sup>
18.2	7.456 <sup>216</sup>	43.06 <sup>82</sup>	61.368 <sup>231</sup>	65.61 <sup>52</sup>	32.360 <sup>170</sup>	39.51 <sup>64</sup>
28.2	7.240 <sup>208</sup>	42.24 <sup>107</sup>	61.137 <sup>225</sup>	65.09 <sup>95</sup>	32.190 <sup>170</sup>	38.87 <sup>75</sup>
Sept. 7.2	7.032 <sup>189</sup>	41.17 <sup>128</sup>	60.912 <sup>208</sup>	64.14 <sup>140</sup>	32.020 <sup>150</sup>	38.12 <sup>80</sup>
17.1	6.843 <sup>160</sup>	39.89 <sup>145</sup>	60.704 <sup>186</sup>	62.74 <sup>177</sup>	31.870 <sup>131</sup>	37.32 <sup>81</sup>
27.1	6.683 <sup>118</sup>	38.44 <sup>154</sup>	60.518 <sup>150</sup>	60.97 <sup>218</sup>	31.739 <sup>95</sup>	36.51 <sup>80</sup>
Oct. 7.1	6.565 <sup>68</sup>	36.90 <sup>158</sup>	60.368 <sup>109</sup>	58.79 <sup>251</sup>	31.644 <sup>59</sup>	35.71 <sup>74</sup>
17.1	6.497 <sup>10</sup>	35.32 <sup>155</sup>	60.259 <sup>60</sup>	56.28 <sup>283</sup>	31.585 <sup>9</sup>	34.97 <sup>62</sup>
27.0	6.487 <sup>54</sup>	33.77 <sup>143</sup>	60.199 <sup>4</sup>	53.45 <sup>309</sup>	31.576 <sup>42</sup>	34.35 <sup>46</sup>
Nov. 6.0	6.541 <sup>119</sup>	32.34 <sup>124</sup>	60.195 <sup>56</sup>	50.36 <sup>327</sup>	31.618 <sup>96</sup>	33.89 <sup>24</sup>
16.0	6.660 <sup>184</sup>	31.10 <sup>99</sup>	60.251 <sup>117</sup>	47.09 <sup>336</sup>	31.714 <sup>153</sup>	33.65 <sup>1</sup>
25.9	6.844 <sup>246</sup>	30.11 <sup>70</sup>	60.368 <sup>177</sup>	43.73 <sup>339</sup>	31.867 <sup>205</sup>	33.64 <sup>26</sup>
Dec. 5.9	7.090 <sup>298</sup>	29.41 <sup>35</sup>	60.545 <sup>231</sup>	40.34 <sup>332</sup>	32.072 <sup>248</sup>	33.90 <sup>50</sup>
15.9	7.388 <sup>341</sup>	29.06 <sup>0</sup>	60.776 <sup>279</sup>	37.02 <sup>314</sup>	32.320 <sup>287</sup>	34.40 <sup>79</sup>
25.9	7.729 <sup>374</sup>	29.06 <sup>35</sup>	61.055 <sup>316</sup>	33.88 <sup>286</sup>	32.607 <sup>315</sup>	35.19 <sup>99</sup>
35.8	8.103	29.41	61.371	31.02	32.922	36.18
Mean Place	4.767	31.96	60.482	51.04	30.041	34.50
Sec $\delta$ , Tan $\delta$	1.341	-0.894	1.319	+0.860	1.103	-0.466
L $\alpha$ , L $\delta$	+0.02	-0.3	-0.02	-0.3	+0.01	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.04	-0.7	+0.04	-0.7	-0.02	-0.7
AUTHORITY	A. N.		A. E.		A. E.	

APPARENT PLACES OF STARS, 1922. 373

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\psi$ Boötis. Mag. 4·7		$\zeta$ Lupi. Mag. 3·5		$\iota$ Libræ. Mag. 4·7		
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.	
	<sup>h</sup> 15 <sup>s</sup> <sup>m</sup> I	<sup>°</sup> 27 <sup>'</sup> 14 <sup>"</sup>	<sup>h</sup> 15 <sup>s</sup> <sup>m</sup> 6	<sup>°</sup> 51 <sup>'</sup> 47 <sup>"</sup>	<sup>h</sup> 15 <sup>s</sup> <sup>m</sup> 7	<sup>°</sup> 19 <sup>'</sup> 29 <sup>"</sup>	
Jan.	0·8 10·8 20·8 30·8	5·296 <sup>304</sup> 5·600 <sup>322</sup> 5·922 <sup>329</sup> 6·251 <sup>326</sup>	60·24 <sup>249</sup> 57·75 <sup>216</sup> 55·59 <sup>175</sup> 53·84 <sup>128</sup>	39·909 <sup>445</sup> 40·354 <sup>466</sup> 40·820 <sup>473</sup> 41·293 <sup>466</sup>	54·24 <sup>4</sup> 54·28 <sup>46</sup> 54·74 <sup>82</sup> 55·56 <sup>116</sup>	45·860 <sup>313</sup> 46·173 <sup>326</sup> 46·499 <sup>330</sup> 46·829 <sup>326</sup>	41·40 <sup>125</sup> 42·65 <sup>136</sup> 44·01 <sup>142</sup> 45·43 <sup>144</sup>
Feb.	9·7 19·7	6·577 <sup>315</sup> 6·892 <sup>296</sup>	52·56 <sup>78</sup> 51·78 <sup>26</sup>	41·759 <sup>453</sup> 42·212 <sup>426</sup>	56·72 <sup>144</sup> 58·16 <sup>170</sup>	47·155 <sup>312</sup> 47·467 <sup>295</sup>	46·87 <sup>139</sup> 48·26 <sup>132</sup>
Mar.	1·7 11·7 21·6 31·6	7·188 <sup>270</sup> 7·458 <sup>241</sup> 7·699 <sup>209</sup> 7·908 <sup>174</sup>	51·52 <sup>26</sup> 51·78 <sup>75</sup> 52·53 <sup>116</sup> 53·69 <sup>154</sup>	42·638 <sup>397</sup> 43·035 <sup>362</sup> 43·397 <sup>320</sup> 43·717 <sup>278</sup>	59·86 <sup>191</sup> 61·77 <sup>206</sup> 63·83 <sup>217</sup> 66·00 <sup>222</sup>	47·762 <sup>271</sup> 48·033 <sup>246</sup> 48·279 <sup>220</sup> 48·499 <sup>191</sup>	49·58 <sup>120</sup> 50·78 <sup>107</sup> 51·85 <sup>94</sup> 52·77 <sup>77</sup>
Apr.	10·6 20·6 30·5	8·082 <sup>139</sup> 8·221 <sup>105</sup> 8·326 <sup>69</sup>	55·23 <sup>184</sup> 57·07 <sup>203</sup> 59·10 <sup>218</sup>	43·995 <sup>235</sup> 44·230 <sup>189</sup> 44·419 <sup>141</sup>	68·22 <sup>226</sup> 70·48 <sup>224</sup> 72·72 <sup>219</sup>	48·690 <sup>163</sup> 48·853 <sup>133</sup> 48·986 <sup>103</sup>	53·54 <sup>64</sup> 54·18 <sup>49</sup> 54·67 <sup>38</sup>
May	10·5 20·5 30·4	8·395 <sup>36</sup> 8·431 <sup>1</sup> 8·432 <sup>29</sup>	61·29 <sup>221</sup> 63·50 <sup>218</sup> 65·68 <sup>209</sup>	44·560 <sup>93</sup> 44·653 <sup>41</sup> 44·694 <sup>7</sup>	74·91 <sup>208</sup> 76·99 <sup>194</sup> 78·93 <sup>178</sup>	49·089 <sup>74</sup> 49·163 <sup>43</sup> 49·206 <sup>12</sup>	55·05 <sup>26</sup> 55·31 <sup>16</sup> 55·47 <sup>7</sup>
June	9·4 19·4 29·4	8·403 <sup>61</sup> 8·342 <sup>91</sup> 8·251 <sup>117</sup>	67·77 <sup>192</sup> 69·69 <sup>172</sup> 71·41 <sup>145</sup>	44·687 <sup>56</sup> 44·631 <sup>107</sup> 44·524 <sup>150</sup>	80·71 <sup>156</sup> 82·27 <sup>132</sup> 83·59 <sup>101</sup>	49·218 <sup>19</sup> 49·199 <sup>49</sup> 49·150 <sup>78</sup>	55·54 <sup>2</sup> 55·52 <sup>10</sup> 55·42 <sup>18</sup>
July	9·3 19·3 29·3	8·134 <sup>140</sup> 7·994 <sup>157</sup> 7·837 <sup>176</sup>	72·86 <sup>116</sup> 74·02 <sup>83</sup> 74·85 <sup>48</sup>	44·374 <sup>191</sup> 44·183 <sup>227</sup> 43·956 <sup>252</sup>	84·60 <sup>69</sup> 85·29 <sup>36</sup> 85·65 <sup>1</sup>	49·072 <sup>105</sup> 48·967 <sup>128</sup> 48·839 <sup>146</sup>	55·24 <sup>27</sup> 54·97 <sup>35</sup> 54·62 <sup>42</sup>
Aug.	8·3 18·2 28·2	7·661 <sup>184</sup> 7·477 <sup>188</sup> 7·289 <sup>183</sup>	75·33 <sup>15</sup> 75·48 <sup>22</sup> 75·26 <sup>58</sup>	43·704 <sup>270</sup> 43·434 <sup>274</sup> 43·160 <sup>267</sup>	85·66 <sup>37</sup> 85·29 <sup>73</sup> 84·56 <sup>108</sup>	48·693 <sup>160</sup> 48·533 <sup>165</sup> 48·368 <sup>163</sup>	54·20 <sup>50</sup> 53·70 <sup>55</sup> 53·15 <sup>59</sup>
Sept.	7·2 17·1 27·1	7·106 <sup>171</sup> 6·935 <sup>150</sup> 6·785 <sup>120</sup>	74·68 <sup>95</sup> 73·73 <sup>130</sup> 72·43 <sup>162</sup>	42·893 <sup>246</sup> 42·647 <sup>213</sup> 42·434 <sup>165</sup>	83·48 <sup>138</sup> 82·10 <sup>163</sup> 80·47 <sup>184</sup>	48·205 <sup>151</sup> 48·054 <sup>131</sup> 47·923 <sup>101</sup>	52·56 <sup>60</sup> 51·96 <sup>59</sup> 51·37 <sup>53</sup>
Oct.	7·1 17·1 27·0	6·665 <sup>82</sup> 6·583 <sup>39</sup> 6·544 <sup>11</sup>	70·81 <sup>198</sup> 68·83 <sup>226</sup> 66·57 <sup>252</sup>	42·269 <sup>105</sup> 42·164 <sup>38</sup> 42·126 <sup>37</sup>	78·63 <sup>196</sup> 76·67 <sup>199</sup> 74·68 <sup>195</sup>	47·822 <sup>63</sup> 47·759 <sup>19</sup> 47·740 <sup>33</sup>	50·84 <sup>44</sup> 50·40 <sup>31</sup> 50·09 <sup>13</sup>
Nov.	6·0 16·0 25·9	6·555 <sup>64</sup> 6·619 <sup>117</sup> 6·736 <sup>168</sup>	64·05 <sup>274</sup> 61·31 <sup>289</sup> 58·42 <sup>296</sup>	42·163 <sup>114</sup> 42·277 <sup>192</sup> 42·469 <sup>265</sup>	72·73 <sup>181</sup> 70·92 <sup>160</sup> 69·32 <sup>132</sup>	47·773 <sup>85</sup> 47·858 <sup>138</sup> 47·996 <sup>189</sup>	49·96 <sup>7</sup> 50·03 <sup>30</sup> 50·33 <sup>54</sup>
Dec.	5·9 15·9 25·9 35·8	6·904 <sup>217</sup> 7·121 <sup>257</sup> 7·378 <sup>290</sup> 7·668 <sup>290</sup>	55·46 <sup>297</sup> 52·49 <sup>286</sup> 49·63 <sup>267</sup> 46·96 <sup>267</sup>	42·734 <sup>330</sup> 43·064 <sup>384</sup> 43·448 <sup>427</sup> 43·875 <sup>427</sup>	68·00 <sup>96</sup> 67·04 <sup>58</sup> 66·46 <sup>20</sup> 66·26 <sup>20</sup>	48·185 <sup>234</sup> 48·419 <sup>271</sup> 48·690 <sup>300</sup> 48·990 <sup>300</sup>	50·87 <sup>78</sup> 51·65 <sup>99</sup> 52·64 <sup>118</sup> 53·82 <sup>118</sup>
Mean Place	6·186	63·60	40·289	71·80	46·268	51·16	
Sec $\delta$ , Tan $\delta$	1·125	+0·515	1·617	—1·271	1·061	—0·354	
L $\alpha$ , L $\delta$	—0·01	—0·3	+0·02	—0·3	+0·01	—0·3	
$\omega$ $\alpha$ , $\omega$ $\delta$	+0·02	—0·7	—0·06	—0·7	—0·02	—0·7	
AUTHORITY	A. E.		A. E.		A. N.		

## 374 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\gamma$ Triang. Aust. Mag. 3.1		$\delta$ Boötis. Mag. 3.5		$\beta$ Libræ. Mag. 2.7	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	h m 15 11 s	° ' 80 23 °	h m 15 12 s	° ' 33 36 °	h m 15 12 s	° ' 9 5 °
Jan. 0.9	35.45 68	14.48 60	20.420 310	13.84 263	47.920 296	38.70 160
10.8	36.13 73	13.88 12	20.730 331	11.21 224	48.216 311	40.30 161
20.8	36.86 74	13.76 37	21.061 341	8.97 181	48.527 314	41.91 153
30.8	37.60 74	14.13 86	21.402 339	7.16 130	48.841 310	43.44 145
Feb. 9.8	38.34 73	14.99 126	21.741 332	5.86 73	49.151 301	44.89 129
19.7	39.07 69	16.25 166	22.073 315	5.13 19	49.452 286	46.18 112
Mar. 1.7	39.76 64	17.91 202	22.388 291	4.94 39	49.738 263	47.30 88
11.7	40.40 59	19.93 229	22.679 263	5.33 90	50.001 237	48.18 67
21.6	40.99 53	22.22 251	22.942 229	6.23 136	50.238 215	48.85 44
31.6	41.52 45	24.73 270	23.171 190	7.59 176	50.453 184	49.29 24
Apr. 10.6	41.97 38	27.43 282	23.361 157	9.35 209	50.637 159	49.53 4
20.6	42.35 30	30.25 289	23.518 117	11.44 231	50.796 129	49.57 12
30.5	42.65 21	33.14 289	23.635 79	13.75 244	50.925 102	49.45 25
May 10.5	42.86 13	36.03 282	23.714 41	16.19 250	51.027 72	49.20 36
20.5	42.99 3	38.85 270	23.755 1	18.69 245	51.099 42	48.84 45
30.5	43.02 5	41.55 254	23.756 30	21.14 234	51.141 13	48.39 50
June 9.4	42.97 13	44.09 228	23.726 67	23.48 215	51.154 14	47.89 53
19.4	42.84 22	46.37 199	23.659 98	25.63 189	51.140 45	47.36 53
29.4	42.62 30	48.36 165	23.561 128	27.52 165	51.095 75	46.83 56
July 9.3	42.32 37	50.01 125	23.433 152	29.17 130	51.020 97	46.27 56
19.3	41.95 42	51.26 79	23.281 177	30.47 92	50.923 121	45.71 52
29.3	41.53 47	52.05 35	23.104 192	31.39 56	50.802 140	45.19 51
Aug. 8.3	41.06 49	52.40 13	22.912 206	31.95 15	50.662 152	44.68 47
18.2	40.57 50	52.27 63	22.706 209	32.10 27	50.510 158	44.21 43
28.2	40.07 49	51.64 110	22.497 204	31.83 65	50.352 157	43.78 36
Sept. 7.2	39.58 45	50.54 153	22.293 197	31.18 107	50.195 146	43.42 28
17.2	39.13 39	49.01 193	22.096 174	30.11 142	50.049 129	43.14 18
27.1	38.74 31	47.08 224	21.922 142	28.69 185	49.920 102	42.96 3
Oct. 7.1	38.43 22	44.84 248	21.780 104	26.84 220	49.818 64	42.93 12
17.1	38.21 10	42.36 261	21.676 62	24.64 245	49.754 25	43.05 27
27.0	38.11 1	39.75 265	21.614 10	22.19 278	49.729 25	43.32 51
Nov. 6.0	38.12 14	37.10 258	21.604 46	19.41 299	49.754 73	43.83 72
16.0	38.26 26	34.52 241	21.650 102	16.42 312	49.827 126	44.55 91
26.0	38.52 39	32.11 213	21.752 158	13.30 320	49.953 173	45.46 115
Dec. 5.9	38.91 49	29.98 177	21.910 208	10.10 317	50.126 216	46.61 131
15.9	39.40 58	28.21 137	22.118 255	6.93 305	50.342 253	47.92 148
25.9	39.98 65	26.84 89	22.373 289	3.88 285	50.595 282	49.40 156
35.9	40.63	25.95	22.662	1.03	50.877	50.96
Mean Place	36.16	34.65	21.503	17.98	48.420	45.69
Sec $\delta$ , Tan $\delta$	2.715	-2.524	1.201	+0.664	1.013	-0.160
L $\alpha$ , L $\delta$	+0.05	-0.3	-0.01	-0.3	0.00	-0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.11	-0.7	+0.03	-0.7	-0.01	-0.7
AUTHORITY	A. E.		A. E.		A. E.	

APPARENT PLACES OF STARS, 1922. 375

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha^2$ Libræ. Mag. 6·7		$\gamma^2$ Ursæ Minoris. Mag. 3·1		$\iota$ Draconis. Mag. 3·5	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 15 <sup>m</sup> 18 <sup>s</sup>	<sup>°</sup> 14 <sup>'</sup> 51 <sup>"</sup>	<sup>h</sup> 15 <sup>m</sup> 20 <sup>s</sup>	<sup>°</sup> 72 <sup>'</sup> 6 <sup>"</sup>	<sup>h</sup> 15 <sup>m</sup> 23 <sup>s</sup>	<sup>°</sup> 59 <sup>'</sup> 13 <sup>"</sup>
Jan. 0·9	40·061 <sup>301</sup>	15·33 <sup>136</sup>	46·32 <sup>62</sup>	32·43 <sup>268</sup>	9·348 <sup>409</sup>	72·01 <sup>283</sup>
10·8	40·362 <sup>316</sup>	16·69 <sup>143</sup>	46·94 <sup>69</sup>	29·75 <sup>213</sup>	9·757 <sup>456</sup>	69·18 <sup>229</sup>
20·8	40·678 <sup>321</sup>	18·12 <sup>144</sup>	47·63 <sup>75</sup>	27·62 <sup>153</sup>	10·213 <sup>483</sup>	66·89 <sup>174</sup>
30·8	40·999 <sup>318</sup>	19·56 <sup>140</sup>	48·38 <sup>77</sup>	26·09 <sup>86</sup>	10·696 <sup>495</sup>	65·15 <sup>109</sup>
Feb. 9·8	41·317 <sup>308</sup>	20·96 <sup>131</sup>	49·15 <sup>77</sup>	25·23 <sup>20</sup>	11·191 <sup>493</sup>	64·06 <sup>43</sup>
19·7	41·625 <sup>291</sup>	22·27 <sup>118</sup>	49·92 <sup>74</sup>	25·03 <sup>49</sup>	11·684 <sup>473</sup>	63·63 <sup>24</sup>
Mar. 1·7	41·916 <sup>272</sup>	23·45 <sup>102</sup>	50·66 <sup>70</sup>	25·52 <sup>115</sup>	12·157 <sup>442</sup>	63·87 <sup>91</sup>
11·7	42·188 <sup>248</sup>	24·47 <sup>85</sup>	51·36 <sup>62</sup>	26·67 <sup>173</sup>	12·599 <sup>399</sup>	64·78 <sup>149</sup>
21·6	42·436 <sup>223</sup>	25·32 <sup>68</sup>	51·98 <sup>53</sup>	28·40 <sup>226</sup>	12·998 <sup>343</sup>	66·27 <sup>205</sup>
31·6	42·659 <sup>195</sup>	26·00 <sup>50</sup>	52·51 <sup>43</sup>	30·66 <sup>265</sup>	13·341 <sup>286</sup>	68·32 <sup>246</sup>
Apr. 10·6	42·854 <sup>169</sup>	26·50 <sup>33</sup>	52·94 <sup>31</sup>	33·31 <sup>297</sup>	13·627 <sup>219</sup>	70·78 <sup>281</sup>
20·6	43·023 <sup>140</sup>	26·83 <sup>19</sup>	53·25 <sup>20</sup>	36·28 <sup>317</sup>	13·846 <sup>152</sup>	73·59 <sup>302</sup>
30·5	43·163 <sup>111</sup>	27·02 <sup>7</sup>	53·45 <sup>7</sup>	39·45 <sup>326</sup>	13·998 <sup>83</sup>	76·61 <sup>315</sup>
May 10·5	43·274 <sup>82</sup>	27·09 <sup>4</sup>	53·52 <sup>5</sup>	42·71 <sup>322</sup>	14·081 <sup>14</sup>	79·76 <sup>316</sup>
20·5	43·356 <sup>52</sup>	27·05 <sup>12</sup>	53·47 <sup>17</sup>	45·93 <sup>309</sup>	14·095 <sup>53</sup>	82·92 <sup>308</sup>
30·5	43·408 <sup>21</sup>	27·93 <sup>20</sup>	53·30 <sup>27</sup>	49·02 <sup>287</sup>	14·042 <sup>116</sup>	86·00 <sup>288</sup>
June 9·4	43·429 <sup>10</sup>	26·73 <sup>24</sup>	53·03 <sup>37</sup>	51·89 <sup>257</sup>	13·926 <sup>175</sup>	88·88 <sup>262</sup>
19·4	43·419 <sup>41</sup>	26·49 <sup>30</sup>	52·66 <sup>46</sup>	54·46 <sup>220</sup>	13·751 <sup>228</sup>	91·50 <sup>226</sup>
29·4	43·378 <sup>70</sup>	26·19 <sup>35</sup>	52·20 <sup>54</sup>	56·66 <sup>176</sup>	13·523 <sup>276</sup>	93·76 <sup>186</sup>
July 9·3	43·308 <sup>96</sup>	25·84 <sup>38</sup>	51·66 <sup>60</sup>	58·42 <sup>127</sup>	13·247 <sup>317</sup>	95·62 <sup>143</sup>
19·3	43·212 <sup>121</sup>	25·46 <sup>41</sup>	51·06 <sup>64</sup>	59·69 <sup>75</sup>	12·930 <sup>350</sup>	97·05 <sup>95</sup>
29·3	43·091 <sup>141</sup>	25·05 <sup>44</sup>	50·42 <sup>68</sup>	60·44 <sup>25</sup>	12·580 <sup>373</sup>	98·00 <sup>45</sup>
Aug. 8·3	42·950 <sup>156</sup>	24·61 <sup>46</sup>	49·74 <sup>70</sup>	60·69 <sup>27</sup>	12·207 <sup>388</sup>	98·45 <sup>5</sup>
18·2	42·794 <sup>163</sup>	24·15 <sup>47</sup>	49·04 <sup>69</sup>	60·42 <sup>82</sup>	11·819 <sup>393</sup>	98·40 <sup>59</sup>
28·2	42·631 <sup>162</sup>	23·68 <sup>47</sup>	48·35 <sup>68</sup>	59·60 <sup>132</sup>	11·426 <sup>386</sup>	97·81 <sup>108</sup>
Sept. 7·2	42·469 <sup>154</sup>	23·21 <sup>44</sup>	47·67 <sup>64</sup>	58·28 <sup>180</sup>	11·040 <sup>365</sup>	96·73 <sup>157</sup>
17·2	42·315 <sup>134</sup>	22·77 <sup>38</sup>	47·03 <sup>59</sup>	56·48 <sup>228</sup>	10·675 <sup>337</sup>	95·16 <sup>203</sup>
27·1	42·181 <sup>107</sup>	22·39 <sup>31</sup>	46·44 <sup>52</sup>	54·20 <sup>268</sup>	10·338 <sup>293</sup>	93·13 <sup>245</sup>
Oct. 7·1	42·074 <sup>72</sup>	22·08 <sup>19</sup>	45·92 <sup>43</sup>	51·52 <sup>305</sup>	10·045 <sup>239</sup>	90·68 <sup>286</sup>
17·1	42·002 <sup>28</sup>	21·89 <sup>4</sup>	45·49 <sup>33</sup>	48·47 <sup>337</sup>	9·806 <sup>173</sup>	87·82 <sup>319</sup>
27·0	41·974 <sup>19</sup>	21·85 <sup>13</sup>	45·16 <sup>22</sup>	45·10 <sup>359</sup>	9·633 <sup>99</sup>	84·63 <sup>346</sup>
Nov. 6·0	41·993 <sup>72</sup>	21·98 <sup>34</sup>	44·94 <sup>8</sup>	41·51 <sup>377</sup>	9·534 <sup>18</sup>	81·17 <sup>365</sup>
16·0	42·065 <sup>123</sup>	22·32 <sup>56</sup>	44·86 <sup>5</sup>	37·74 <sup>381</sup>	9·516 <sup>69</sup>	77·52 <sup>375</sup>
26·0	42·188 <sup>173</sup>	22·88 <sup>78</sup>	44·91 <sup>19</sup>	33·93 <sup>377</sup>	9·585 <sup>151</sup>	73·77 <sup>374</sup>
Dec. 5·9	42·361 <sup>219</sup>	23·66 <sup>98</sup>	45·10 <sup>32</sup>	30·16 <sup>360</sup>	9·736 <sup>234</sup>	70·03 <sup>364</sup>
15·9	42·580 <sup>256</sup>	24·64 <sup>116</sup>	45·42 <sup>44</sup>	26·56 <sup>335</sup>	9·970 <sup>312</sup>	66·39 <sup>342</sup>
25·9	42·836 <sup>287</sup>	25·80 <sup>132</sup>	45·86 <sup>56</sup>	23·21 <sup>298</sup>	10·282 <sup>375</sup>	62·97 <sup>308</sup>
35·9	43·123	27·12	46·42	20·23	10·657	59·89
Mean Place	40·554	24·03	50·50	41·42	11·662	79·65
Sec $\delta$ , Tan $\delta$	1·035	—0·265	3·256	+3·098	1·955	+1·680
L $\alpha$ , L $\delta$	+0·01	—0·3	—0·06	—0·3	—0·03	—0·3
$\omega$ $\alpha$ , $\omega$ $\delta$	—0·01	—0·8	+0·13	—0·8	+0·07	—0·8
AUTHORITY			A. E.		A. E.	

# 376 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	32 Libræ. Mag. 5·9		113 G. Lupi. Mag. 3·0		α Coronæ Bor. Mag. 2·3	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	h m 15 23 <sub>s</sub>	16 26 <sub>o</sub>	h m 15 29 <sub>s</sub>	40 54 <sub>o</sub>	h m 15 31 <sub>s</sub>	26 58 <sub>o</sub>
Jan.	0·9 50·738 <sup>301</sup> 10·8 51·039 <sup>316</sup> 20·8 51·355 <sup>323</sup> 30·8 51·678 <sup>320</sup>	34·87 <sup>127</sup> 36·14 <sup>136</sup> 37·50 <sup>138</sup> 38·88 <sup>136</sup>	55·645 <sup>366</sup> 56·011 <sup>387</sup> 56·398 <sup>396</sup> 56·794 <sup>395</sup>	6·24 <sup>23</sup> 6·47 <sup>53</sup> 7·00 <sup>80</sup> 7·80 <sup>103</sup>	22·077 <sup>286</sup> 22·363 <sup>308</sup> 22·671 <sup>317</sup> 22·988 <sup>324</sup>	33·23 <sup>262</sup> 30·61 <sup>229</sup> 28·32 <sup>188</sup> 26·44 <sup>148</sup>
Feb.	9·8 51·998 <sup>311</sup> 19·7 52·309 <sup>296</sup>	40·24 <sup>130</sup> 41·54 <sup>118</sup>	57·189 <sup>385</sup> 57·574 <sup>369</sup>	8·83 <sup>120</sup> 10·03 <sup>138</sup>	23·312 <sup>318</sup> 23·630 <sup>305</sup>	24·96 <sup>97</sup> 23·99 <sup>43</sup>
Mar.	1·7 52·605 <sup>277</sup> 11·7 52·882 <sup>252</sup> 21·7 53·134 <sup>229</sup> 31·6 53·363 <sup>202</sup>	42·72 <sup>104</sup> 43·76 <sup>89</sup> 44·65 <sup>71</sup> 45·36 <sup>56</sup>	57·943 <sup>348</sup> 58·291 <sup>322</sup> 58·613 <sup>293</sup> 58·906 <sup>261</sup>	11·41 <sup>148</sup> 12·89 <sup>157</sup> 14·46 <sup>160</sup> 16·06 <sup>163</sup>	23·935 <sup>286</sup> 24·221 <sup>263</sup> 24·484 <sup>234</sup> 24·718 <sup>200</sup>	23·56 <sup>6</sup> 23·62 <sup>61</sup> 24·23 <sup>106</sup> 25·29 <sup>145</sup>
Apr.	10·6 53·565 <sup>175</sup> 20·6 53·740 <sup>146</sup> 30·5 53·886 <sup>118</sup>	45·92 <sup>41</sup> 46·33 <sup>27</sup> 46·60 <sup>15</sup>	59·167 <sup>226</sup> 59·393 <sup>190</sup> 59·583 <sup>153</sup>	17·69 <sup>162</sup> 19·31 <sup>160</sup> 20·91 <sup>154</sup>	24·918 <sup>172</sup> 25·090 <sup>135</sup> 25·225 <sup>104</sup>	26·74 <sup>176</sup> 28·50 <sup>202</sup> 30·52 <sup>221</sup>
May	10·5 54·004 <sup>88</sup> 20·5 54·092 <sup>58</sup> 30·5 54·150 <sup>26</sup>	46·75 <sup>4</sup> 46·79 <sup>3</sup> 46·76 <sup>11</sup>	59·736 <sup>116</sup> 59·852 <sup>73</sup> 59·925 <sup>33</sup>	22·45 <sup>147</sup> 23·92 <sup>137</sup> 25·29 <sup>124</sup>	25·329 <sup>65</sup> 25·394 <sup>32</sup> 25·426 <sup>1</sup>	32·73 <sup>228</sup> 35·01 <sup>229</sup> 37·30 <sup>221</sup>
June	9·4 54·176 <sup>6</sup> 19·4 54·170 <sup>36</sup> 29·4 54·134 <sup>67</sup>	46·65 <sup>18</sup> 46·47 <sup>22</sup> 46·25 <sup>28</sup>	59·958 <sup>9</sup> 59·949 <sup>51</sup> 59·898 <sup>92</sup>	26·53 <sup>112</sup> 27·65 <sup>92</sup> 28·57 <sup>73</sup>	25·425 <sup>37</sup> 25·388 <sup>67</sup> 25·321 <sup>102</sup>	39·51 <sup>210</sup> 41·61 <sup>189</sup> 43·50 <sup>165</sup>
July	9·4 54·067 <sup>95</sup> 19·3 53·972 <sup>121</sup> 29·3 53·851 <sup>141</sup>	45·97 <sup>32</sup> 45·65 <sup>37</sup> 45·28 <sup>40</sup>	59·806 <sup>128</sup> 59·678 <sup>162</sup> 59·516 <sup>190</sup>	29·30 <sup>51</sup> 29·81 <sup>28</sup> 30·09 <sup>2</sup>	25·219 <sup>127</sup> 25·092 <sup>150</sup> 24·942 <sup>172</sup>	45·15 <sup>137</sup> 46·52 <sup>106</sup> 47·58 <sup>73</sup>
Aug.	8·3 53·710 <sup>157</sup> 18·2 53·553 <sup>165</sup> 28·2 53·488 <sup>165</sup>	44·88 <sup>44</sup> 44·44 <sup>47</sup> 43·97 <sup>48</sup>	59·326 <sup>208</sup> 59·118 <sup>220</sup> 58·898 <sup>219</sup>	30·11 <sup>24</sup> 29·87 <sup>52</sup> 29·35 <sup>76</sup>	24·770 <sup>189</sup> 24·581 <sup>195</sup> 24·386 <sup>195</sup>	48·31 <sup>37</sup> 48·68 <sup>1</sup> 48·67 <sup>36</sup>
Sept.	7·2 53·223 <sup>157</sup> 17·2 53·066 <sup>140</sup> 27·1 52·926 <sup>112</sup>	43·49 <sup>47</sup> 43·02 <sup>43</sup> 42·59 <sup>36</sup>	58·679 <sup>209</sup> 58·470 <sup>186</sup> 58·284 <sup>152</sup>	28·59 <sup>99</sup> 27·60 <sup>118</sup> 26·42 <sup>132</sup>	24·191 <sup>185</sup> 24·006 <sup>175</sup> 23·831 <sup>145</sup>	48·31 <sup>74</sup> 47·57 <sup>108</sup> 46·49 <sup>146</sup>
Oct.	7·1 52·814 <sup>76</sup> 17·1 52·738 <sup>33</sup> 27·1 52·705 <sup>15</sup>	42·23 <sup>27</sup> 41·96 <sup>13</sup> 41·83 <sup>4</sup>	58·132 <sup>105</sup> 58·027 <sup>53</sup> 57·974 <sup>7</sup>	25·10 <sup>141</sup> 23·69 <sup>143</sup> 22·26 <sup>137</sup>	23·686 <sup>111</sup> 23·575 <sup>70</sup> 23·505 <sup>22</sup>	45·03 <sup>182</sup> 43·21 <sup>211</sup> 41·10 <sup>243</sup>
Nov.	6·0 52·720 <sup>67</sup> 16·0 52·787 <sup>119</sup> 26·0 52·906 <sup>170</sup>	41·87 <sup>73</sup> 42·10 <sup>44</sup> 42·54 <sup>66</sup>	57·981 <sup>74</sup> 58·055 <sup>138</sup> 58·193 <sup>202</sup>	20·89 <sup>127</sup> 19·62 <sup>106</sup> 18·56 <sup>84</sup>	23·483 <sup>29</sup> 23·512 <sup>85</sup> 23·597 <sup>136</sup>	38·67 <sup>264</sup> 36·03 <sup>282</sup> 33·21 <sup>295</sup>
Dec.	5·9 53·076 <sup>216</sup> 15·9 53·292 <sup>255</sup> 25·9 53·547 <sup>286</sup> 35·9 53·833	43·20 <sup>88</sup> 44·08 <sup>106</sup> 45·14 <sup>122</sup> 46·36	58·395 <sup>258</sup> 58·653 <sup>307</sup> 58·960 <sup>347</sup> 59·307	17·72 <sup>55</sup> 17·17 <sup>26</sup> 16·91 <sup>4</sup> 16·95	23·733 <sup>186</sup> 23·919 <sup>232</sup> 24·151 <sup>266</sup> 24·417	30·26 <sup>297</sup> 27·29 <sup>293</sup> 24·36 <sup>276</sup> 21·60
Mean Place	51·250	44·08	56·171	21·37	23·089	34·74
Sec δ, Tan δ	1·043	—0·295	1·323	—0·866	1·122	+0·509
L α, L δ	+0·01	—0·3	+0·02	—0·2	—0·01	—0·2
ω α, ω δ	—0·01	—0·8	—0·04	—0·8	+0·02	—0·8
AUTHORITY			A. E.		A. E.	

APPARENT PLACES OF STARS, 1922. 377

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Serpentis. Mag. 2.8		$\mu$ Serpentis. Mag. 3.6		$\zeta$ Ursæ Minoris. Mag. 4.3	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 15 <sup>m</sup> 40	<sup>°</sup> 6 <sup>'</sup> 40	<sup>h</sup> 15 <sup>m</sup> 45	<sup>°</sup> 3 <sup>'</sup> 11	<sup>h</sup> 15 <sup>m</sup> 46	<sup>°</sup> 78 <sup>'</sup> 1
Jan. 0.9	24.716 <sup>272</sup>	15.99 <sup>205</sup>	32.163 <sup>273</sup>	26.76 <sup>171</sup>	42.04 <sup>76</sup>	59.50 <sup>282</sup>
10.8	24.988 <sup>289</sup>	13.94 <sup>191</sup>	32.436 <sup>291</sup>	28.47 <sup>166</sup>	42.80 <sup>91</sup>	56.68 <sup>236</sup>
20.8	25.277 <sup>300</sup>	12.03 <sup>174</sup>	32.727 <sup>302</sup>	30.13 <sup>156</sup>	43.71 <sup>101</sup>	54.32 <sup>174</sup>
30.8	25.577 <sup>304</sup>	10.29 <sup>146</sup>	33.029 <sup>305</sup>	31.69 <sup>139</sup>	44.72 <sup>108</sup>	52.58 <sup>113</sup>
Feb. 9.8	25.881 <sup>298</sup>	8.83 <sup>117</sup>	33.334 <sup>299</sup>	33.08 <sup>119</sup>	45.80 <sup>110</sup>	51.45 <sup>47</sup>
19.7	26.179 <sup>290</sup>	7.66 <sup>80</sup>	33.633 <sup>289</sup>	34.27 <sup>93</sup>	46.90 <sup>110</sup>	50.98 <sup>23</sup>
Mar. 1.7	26.469 <sup>269</sup>	6.86 <sup>44</sup>	33.922 <sup>274</sup>	35.20 <sup>66</sup>	48.00 <sup>105</sup>	51.21 <sup>87</sup>
11.7	26.738 <sup>251</sup>	6.42 <sup>8</sup>	34.196 <sup>254</sup>	35.86 <sup>38</sup>	49.05 <sup>96</sup>	52.08 <sup>151</sup>
21.7	26.989 <sup>225</sup>	6.34 <sup>26</sup>	34.450 <sup>232</sup>	36.24 <sup>12</sup>	50.01 <sup>84</sup>	53.59 <sup>205</sup>
31.6	27.214 <sup>203</sup>	6.60 <sup>58</sup>	34.682 <sup>207</sup>	36.36 <sup>13</sup>	50.85 <sup>70</sup>	55.64 <sup>249</sup>
Apr. 10.6	27.417 <sup>175</sup>	7.18 <sup>84</sup>	34.889 <sup>183</sup>	36.23 <sup>35</sup>	51.55 <sup>53</sup>	58.13 <sup>286</sup>
20.6	27.592 <sup>148</sup>	8.02 <sup>107</sup>	35.072 <sup>157</sup>	35.88 <sup>55</sup>	52.08 <sup>37</sup>	60.99 <sup>309</sup>
30.6	27.740 <sup>117</sup>	9.09 <sup>121</sup>	35.229 <sup>129</sup>	35.33 <sup>67</sup>	52.45 <sup>18</sup>	64.08 <sup>324</sup>
May 10.5	27.857 <sup>89</sup>	10.30 <sup>132</sup>	35.358 <sup>99</sup>	34.66 <sup>79</sup>	52.63 <sup>1</sup>	67.32 <sup>325</sup>
20.5	27.946 <sup>58</sup>	11.62 <sup>137</sup>	35.457 <sup>70</sup>	33.87 <sup>86</sup>	52.62 <sup>18</sup>	70.57 <sup>317</sup>
30.5	28.004 <sup>29</sup>	12.99 <sup>138</sup>	35.527 <sup>38</sup>	33.01 <sup>87</sup>	52.44 <sup>35</sup>	73.74 <sup>300</sup>
June 9.4	28.033 <sup>3</sup>	14.37 <sup>134</sup>	35.565 <sup>9</sup>	32.14 <sup>87</sup>	52.09 <sup>52</sup>	76.74 <sup>271</sup>
19.4	28.030 <sup>34</sup>	15.71 <sup>125</sup>	35.574 <sup>23</sup>	31.27 <sup>85</sup>	51.57 <sup>65</sup>	79.45 <sup>239</sup>
29.4	27.996 <sup>64</sup>	16.96 <sup>116</sup>	35.551 <sup>53</sup>	30.42 <sup>80</sup>	50.92 <sup>79</sup>	81.84 <sup>199</sup>
July 9.4	27.932 <sup>91</sup>	18.12 <sup>101</sup>	35.498 <sup>86</sup>	29.62 <sup>73</sup>	50.13 <sup>89</sup>	83.83 <sup>154</sup>
19.3	27.841 <sup>118</sup>	19.13 <sup>84</sup>	35.412 <sup>109</sup>	28.89 <sup>65</sup>	49.24 <sup>98</sup>	85.37 <sup>106</sup>
29.3	27.723 <sup>139</sup>	19.97 <sup>66</sup>	35.303 <sup>134</sup>	28.24 <sup>55</sup>	48.26 <sup>104</sup>	86.43 <sup>52</sup>
Aug. 8.3	27.584 <sup>155</sup>	20.63 <sup>48</sup>	35.169 <sup>151</sup>	27.69 <sup>47</sup>	47.22 <sup>108</sup>	86.95 <sup>5</sup>
18.3	27.429 <sup>164</sup>	21.11 <sup>29</sup>	35.018 <sup>161</sup>	27.22 <sup>34</sup>	46.14 <sup>109</sup>	87.00 <sup>52</sup>
28.2	27.265 <sup>168</sup>	21.40 <sup>8</sup>	34.857 <sup>167</sup>	26.88 <sup>25</sup>	45.05 <sup>108</sup>	86.48 <sup>102</sup>
Sept. 7.2	27.097 <sup>163</sup>	21.48 <sup>14</sup>	34.690 <sup>162</sup>	26.63 <sup>10</sup>	43.97 <sup>104</sup>	85.46 <sup>152</sup>
17.2	26.934 <sup>149</sup>	21.34 <sup>39</sup>	34.528 <sup>148</sup>	26.53 <sup>5</sup>	42.93 <sup>99</sup>	83.94 <sup>198</sup>
27.1	26.785 <sup>125</sup>	20.95 <sup>63</sup>	34.380 <sup>126</sup>	26.58 <sup>20</sup>	41.94 <sup>89</sup>	81.96 <sup>243</sup>
Oct. 7.1	26.660 <sup>92</sup>	20.32 <sup>84</sup>	34.254 <sup>92</sup>	26.78 <sup>40</sup>	41.05 <sup>77</sup>	79.53 <sup>282</sup>
17.1	26.568 <sup>58</sup>	19.48 <sup>111</sup>	34.162 <sup>56</sup>	27.18 <sup>59</sup>	40.28 <sup>63</sup>	76.71 <sup>316</sup>
27.0	26.510 <sup>9</sup>	18.37 <sup>137</sup>	34.106 <sup>10</sup>	27.77 <sup>79</sup>	39.65 <sup>48</sup>	73.55 <sup>343</sup>
Nov. 6.0	26.501 <sup>35</sup>	17.00 <sup>157</sup>	34.096 <sup>39</sup>	28.56 <sup>100</sup>	39.17 <sup>29</sup>	70.12 <sup>363</sup>
16.0	26.536 <sup>89</sup>	15.43 <sup>180</sup>	34.135 <sup>87</sup>	29.56 <sup>120</sup>	38.88 <sup>11</sup>	66.49 <sup>375</sup>
26.0	26.625 <sup>136</sup>	13.63 <sup>198</sup>	34.222 <sup>138</sup>	30.76 <sup>139</sup>	38.77 <sup>10</sup>	62.74 <sup>373</sup>
Dec. 5.9	26.761 <sup>182</sup>	11.65 <sup>208</sup>	34.360 <sup>184</sup>	32.15 <sup>155</sup>	38.87 <sup>30</sup>	59.01 <sup>364</sup>
15.9	26.943 <sup>223</sup>	9.57 <sup>212</sup>	34.544 <sup>224</sup>	33.70 <sup>165</sup>	39.17 <sup>50</sup>	55.37 <sup>343</sup>
25.9	27.166 <sup>253</sup>	7.45 <sup>213</sup>	34.768 <sup>255</sup>	35.35 <sup>172</sup>	39.67 <sup>67</sup>	51.94 <sup>310</sup>
35.9	27.419	5.32	35.023	37.07	40.34	48.84
Mean Place	25.468	12.33	32.850	33.05	48.72	66.36
Sec $\delta$ , Tan $\delta$	1.007	+0.117	1.002	-0.056	4.824	+4.719
L $\alpha$ , L $\delta$	0.00	-0.2	0.00	-0.2	-0.10	-0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	-0.8	0.00	-0.8	+0.17	-0.8
AUTHORITY	A. E.		A. E.		A. E.	

# 378 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Serpentis. Mag. 3·8		β Triang. Aust. Mag. 3·0		γ Serpentis. Mag. 3·9		
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.	
	<sup>h</sup> 15 <sup>m</sup> 46	<sup>°</sup> 4 <sup>'</sup> 42	<sup>h</sup> 15 <sup>m</sup> 48	<sup>°</sup> 63 <sup>'</sup> 11	<sup>h</sup> 15 <sup>m</sup> 52	<sup>°</sup> 15 <sup>'</sup> 54	
Jan.	0·9 10·9 20·8 30·8	54·812 <sup>266</sup> 55·078 <sup>287</sup> 55·365 <sup>298</sup> 55·663 <sup>303</sup>	46·57 <sup>198</sup> 44·59 <sup>188</sup> 42·71 <sup>171</sup> 41·00 <sup>144</sup>	14·25 <sup>54</sup> 14·79 <sup>59</sup> 15·38 <sup>61</sup> 15·99 <sup>62</sup>	10·89 <sup>87</sup> 10·02 <sup>45</sup> 9·57 <sup>3</sup> 9·54 <sup>40</sup>	50·043 <sup>264</sup> 50·307 <sup>286</sup> 50·593 <sup>300</sup> 50·893 <sup>305</sup>	56·64 <sup>237</sup> 54·27 <sup>220</sup> 52·07 <sup>193</sup> 50·14 <sup>157</sup>
Feb.	9·8 19·7	55·966 <sup>298</sup> 56·264 <sup>290</sup>	39·56 <sup>118</sup> 38·38 <sup>84</sup>	16·61 <sup>62</sup> 17·23 <sup>59</sup>	9·94 <sup>82</sup> 10·76 <sup>114</sup>	51·198 <sup>303</sup> 51·501 <sup>294</sup>	48·57 <sup>118</sup> 47·39 <sup>74</sup>
Mar.	1·7 11·7 21·7 31·6	56·554 <sup>272</sup> 56·826 <sup>253</sup> 57·079 <sup>231</sup> 57·310 <sup>207</sup>	37·54 <sup>46</sup> 37·08 <sup>15</sup> 36·93 <sup>18</sup> 37·11 <sup>51</sup>	17·82 <sup>58</sup> 18·40 <sup>54</sup> 18·94 <sup>49</sup> 19·43 <sup>45</sup>	11·90 <sup>149</sup> 13·39 <sup>178</sup> 15·17 <sup>201</sup> 17·18 <sup>221</sup>	51·795 <sup>279</sup> 52·074 <sup>260</sup> 52·334 <sup>237</sup> 52·571 <sup>212</sup>	46·65 <sup>30</sup> 46·35 <sup>14</sup> 46·49 <sup>56</sup> 47·05 <sup>93</sup>
Apr.	10·6 20·6 30·6	57·517 <sup>179</sup> 57·696 <sup>157</sup> 57·853 <sup>125</sup>	37·62 <sup>75</sup> 38·37 <sup>96</sup> 39·33 <sup>112</sup>	19·88 <sup>39</sup> 20·27 <sup>32</sup> 20·59 <sup>27</sup>	19·39 <sup>237</sup> 21·76 <sup>247</sup> 24·23 <sup>254</sup>	52·783 <sup>186</sup> 52·969 <sup>157</sup> 53·126 <sup>127</sup>	47·98 <sup>124</sup> 49·22 <sup>150</sup> 50·72 <sup>168</sup>
May	10·5 20·5 30·5	57·978 <sup>96</sup> 58·074 <sup>66</sup> 58·140 <sup>34</sup>	40·45 <sup>124</sup> 41·69 <sup>129</sup> 42·98 <sup>129</sup>	20·86 <sup>20</sup> 21·06 <sup>12</sup> 21·18 <sup>5</sup>	26·77 <sup>253</sup> 29·30 <sup>248</sup> 31·78 <sup>238</sup>	53·253 <sup>96</sup> 53·349 <sup>64</sup> 53·413 <sup>31</sup>	52·40 <sup>179</sup> 54·19 <sup>183</sup> 56·02 <sup>182</sup>
June	9·4 19·4 29·4	58·174 <sup>4</sup> 58·178 <sup>28</sup> 58·150 <sup>58</sup>	44·27 <sup>127</sup> 45·54 <sup>121</sup> 46·75 <sup>110</sup>	21·23 <sup>3</sup> 21·20 <sup>10</sup> 21·10 <sup>17</sup>	34·16 <sup>223</sup> 36·39 <sup>200</sup> 38·39 <sup>177</sup>	53·444 <sup>1</sup> 53·443 <sup>34</sup> 53·409 <sup>66</sup>	57·84 <sup>175</sup> 59·59 <sup>162</sup> 61·21 <sup>145</sup>
July	9·4 19·3 29·3	58·092 <sup>86</sup> 58·006 <sup>114</sup> 57·892 <sup>136</sup>	47·85 <sup>97</sup> 48·82 <sup>82</sup> 49·64 <sup>66</sup>	20·93 <sup>24</sup> 20·69 <sup>30</sup> 20·39 <sup>35</sup>	40·16 <sup>142</sup> 41·58 <sup>107</sup> 42·65 <sup>67</sup>	53·343 <sup>96</sup> 53·247 <sup>123</sup> 53·124 <sup>146</sup>	62·66 <sup>125</sup> 63·91 <sup>103</sup> 64·94 <sup>77</sup>
Aug.	8·3 18·3 28·2	57·756 <sup>154</sup> 57·602 <sup>163</sup> 57·439 <sup>168</sup>	50·30 <sup>50</sup> 50·80 <sup>34</sup> 51·14 <sup>11</sup>	20·04 <sup>38</sup> 19·66 <sup>41</sup> 19·25 <sup>40</sup>	43·32 <sup>23</sup> 43·55 <sup>20</sup> 43·35 <sup>64</sup>	52·978 <sup>165</sup> 52·813 <sup>176</sup> 52·637 <sup>181</sup>	65·71 <sup>50</sup> 66·21 <sup>23</sup> 66·44 <sup>7</sup>
Sept.	7·2 17·2 27·2	57·271 <sup>165</sup> 57·106 <sup>149</sup> 56·957 <sup>131</sup>	51·25 <sup>9</sup> 51·16 <sup>29</sup> 50·87 <sup>52</sup>	18·85 <sup>39</sup> 18·46 <sup>36</sup> 18·10 <sup>31</sup>	42·71 <sup>108</sup> 41·63 <sup>147</sup> 40·16 <sup>182</sup>	52·456 <sup>177</sup> 52·279 <sup>165</sup> 52·114 <sup>143</sup>	66·37 <sup>37</sup> 66·00 <sup>66</sup> 65·34 <sup>97</sup>
Oct.	7·1 17·1 27·1	56·826 <sup>96</sup> 56·730 <sup>62</sup> 56·668 <sup>15</sup>	50·35 <sup>75</sup> 49·60 <sup>100</sup> 48·60 <sup>124</sup>	17·79 <sup>23</sup> 17·56 <sup>15</sup> 17·41 <sup>5</sup>	38·34 <sup>209</sup> 36·25 <sup>228</sup> 33·97 <sup>238</sup>	51·971 <sup>113</sup> 51·858 <sup>75</sup> 51·783 <sup>31</sup>	64·37 <sup>127</sup> 63·10 <sup>156</sup> 61·54 <sup>183</sup>
Nov.	6·0 16·0 26·0	56·653 <sup>33</sup> 56·686 <sup>82</sup> 56·768 <sup>133</sup>	47·36 <sup>147</sup> 45·89 <sup>165</sup> 44·24 <sup>184</sup>	17·36 <sup>5</sup> 17·41 <sup>15</sup> 17·56 <sup>26</sup>	31·59 <sup>238</sup> 29·21 <sup>228</sup> 26·93 <sup>210</sup>	51·752 <sup>18</sup> 51·770 <sup>69</sup> 51·839 <sup>119</sup>	59·71 <sup>208</sup> 57·63 <sup>229</sup> 55·34 <sup>245</sup>
Dec.	6·0 15·9 25·9 35·9	56·901 <sup>174</sup> 57·075 <sup>219</sup> 57·294 <sup>250</sup> 57·544 <sup>250</sup>	42·40 <sup>198</sup> 40·42 <sup>202</sup> 38·40 <sup>204</sup> 36·36 <sup>204</sup>	17·82 <sup>35</sup> 18·17 <sup>43</sup> 18·60 <sup>51</sup> 19·11 <sup>51</sup>	24·83 <sup>183</sup> 23·00 <sup>151</sup> 21·49 <sup>112</sup> 20·37 <sup>112</sup>	51·958 <sup>167</sup> 52·125 <sup>210</sup> 52·335 <sup>246</sup> 52·581 <sup>246</sup>	52·89 <sup>254</sup> 50·35 <sup>256</sup> 47·79 <sup>250</sup> 45·29 <sup>250</sup>
Mean Place	55·568	42·18	15·31	29·53	50·947	54·56	
Sec δ, Tan δ	1·003	+0·082	2·217	—1·979	1·040	+0·285	
L α, L δ	0·00	—0·2	+0·04	—0·2	—0·01	—0·2	
ω α, ω δ	0·00	—0·8	—0·07	—0·8	+0·01	—0·8	
AUTHORITY	A. E.		A. E.		A. N.		



# APPARENT PLACES OF STARS, 1922. 379

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\pi$ Scorpii. Mag. 3.0		$\delta$ Scorpii. Mag. 2.5		$\beta^1$ Scorpii. Mag. 2.9	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 15 <sup>m</sup> 54	<sup>°</sup> 25 <sup>'</sup> 53	<sup>h</sup> 15 <sup>m</sup> 55	<sup>°</sup> 22 <sup>'</sup> 23	<sup>h</sup> 16 <sup>m</sup> 0	<sup>°</sup> 19 <sup>'</sup> 35
Jan. 0.9	7.078 <sup>301</sup>	15.28 <sup>69</sup>	42.388 <sup>292</sup>	52.20 <sup>84</sup>	53.175 <sup>284</sup>	24.63 <sup>94</sup>
10.9	7.379 <sup>321</sup>	15.97 <sup>84</sup>	42.680 <sup>313</sup>	53.04 <sup>97</sup>	53.459 <sup>304</sup>	25.57 <sup>104</sup>
20.8	7.700 <sup>335</sup>	16.81 <sup>96</sup>	42.993 <sup>326</sup>	54.01 <sup>103</sup>	53.763 <sup>317</sup>	26.61 <sup>108</sup>
30.8	8.035 <sup>337</sup>	17.77 <sup>103</sup>	43.319 <sup>329</sup>	55.04 <sup>109</sup>	54.080 <sup>323</sup>	27.69 <sup>111</sup>
Feb. 9.8	8.372 <sup>333</sup>	18.80 <sup>108</sup>	43.648 <sup>324</sup>	56.13 <sup>108</sup>	54.403 <sup>325</sup>	28.80 <sup>106</sup>
19.8	8.705 <sup>323</sup>	19.88 <sup>107</sup>	43.972 <sup>315</sup>	57.21 <sup>105</sup>	54.723 <sup>310</sup>	29.86 <sup>99</sup>
Mar. 1.7	9.028 <sup>307</sup>	20.95 <sup>104</sup>	44.287 <sup>302</sup>	58.26 <sup>97</sup>	55.033 <sup>296</sup>	30.85 <sup>92</sup>
11.7	9.335 <sup>288</sup>	21.99 <sup>98</sup>	44.589 <sup>282</sup>	59.23 <sup>87</sup>	55.329 <sup>282</sup>	31.77 <sup>75</sup>
21.7	9.623 <sup>266</sup>	22.97 <sup>92</sup>	44.871 <sup>261</sup>	60.10 <sup>79</sup>	55.611 <sup>259</sup>	32.52 <sup>67</sup>
31.6	9.889 <sup>242</sup>	23.89 <sup>83</sup>	45.132 <sup>238</sup>	60.89 <sup>68</sup>	55.870 <sup>238</sup>	33.19 <sup>52</sup>
Apr. 10.6	10.131 <sup>216</sup>	24.72 <sup>75</sup>	45.370 <sup>211</sup>	61.57 <sup>58</sup>	56.108 <sup>211</sup>	33.71 <sup>42</sup>
20.6	10.347 <sup>187</sup>	25.47 <sup>68</sup>	45.581 <sup>185</sup>	62.15 <sup>47</sup>	56.319 <sup>185</sup>	34.13 <sup>31</sup>
30.6	10.534 <sup>158</sup>	26.15 <sup>60</sup>	45.766 <sup>154</sup>	62.62 <sup>40</sup>	56.504 <sup>157</sup>	34.44 <sup>24</sup>
May 10.5	10.692 <sup>127</sup>	26.75 <sup>53</sup>	45.920 <sup>125</sup>	63.02 <sup>32</sup>	56.661 <sup>129</sup>	34.68 <sup>13</sup>
20.5	10.819 <sup>95</sup>	27.28 <sup>47</sup>	46.045 <sup>93</sup>	63.34 <sup>25</sup>	56.790 <sup>94</sup>	34.81 <sup>8</sup>
30.5	10.913 <sup>58</sup>	27.75 <sup>39</sup>	46.138 <sup>57</sup>	63.59 <sup>20</sup>	56.884 <sup>61</sup>	34.89 <sup>2</sup>
June 9.5	10.971 <sup>22</sup>	28.14 <sup>33</sup>	46.195 <sup>24</sup>	63.79 <sup>15</sup>	56.945 <sup>27</sup>	34.91 <sup>3</sup>
19.4	10.993 <sup>14</sup>	28.47 <sup>25</sup>	46.219 <sup>13</sup>	63.94 <sup>7</sup>	56.972 <sup>6</sup>	34.88 <sup>7</sup>
29.4	10.979 <sup>51</sup>	28.72 <sup>17</sup>	46.206 <sup>47</sup>	64.01 <sup>0</sup>	56.966 <sup>44</sup>	34.81 <sup>11</sup>
July 9.4	10.928 <sup>85</sup>	28.89 <sup>8</sup>	46.159 <sup>84</sup>	64.01 <sup>6</sup>	56.922 <sup>76</sup>	34.70 <sup>17</sup>
19.3	10.843 <sup>117</sup>	28.97 <sup>3</sup>	46.075 <sup>111</sup>	63.95 <sup>13</sup>	56.846 <sup>107</sup>	34.53 <sup>17</sup>
29.3	10.726 <sup>145</sup>	28.94 <sup>13</sup>	45.964 <sup>141</sup>	63.82 <sup>18</sup>	56.739 <sup>136</sup>	34.36 <sup>24</sup>
Aug. 8.3	10.581 <sup>165</sup>	28.81 <sup>25</sup>	45.823 <sup>160</sup>	63.64 <sup>28</sup>	56.603 <sup>157</sup>	34.12 <sup>30</sup>
18.3	10.416 <sup>181</sup>	28.56 <sup>36</sup>	45.663 <sup>175</sup>	63.36 <sup>37</sup>	56.446 <sup>171</sup>	33.82 <sup>36</sup>
28.2	10.235 <sup>185</sup>	28.20 <sup>47</sup>	45.488 <sup>179</sup>	62.99 <sup>43</sup>	56.275 <sup>177</sup>	33.46 <sup>39</sup>
Sept. 7.2	10.050 <sup>182</sup>	27.73 <sup>56</sup>	45.309 <sup>176</sup>	62.56 <sup>49</sup>	56.098 <sup>173</sup>	33.07 <sup>39</sup>
17.2	9.868 <sup>167</sup>	27.17 <sup>62</sup>	45.133 <sup>162</sup>	62.07 <sup>51</sup>	55.925 <sup>162</sup>	32.68 <sup>43</sup>
27.2	9.701 <sup>143</sup>	26.55 <sup>66</sup>	44.971 <sup>141</sup>	61.56 <sup>53</sup>	55.763 <sup>141</sup>	32.25 <sup>42</sup>
Oct. 7.1	9.558 <sup>107</sup>	25.89 <sup>66</sup>	44.830 <sup>103</sup>	61.03 <sup>50</sup>	55.622 <sup>107</sup>	31.83 <sup>36</sup>
17.1	9.451 <sup>65</sup>	25.23 <sup>62</sup>	44.727 <sup>66</sup>	60.53 <sup>42</sup>	55.515 <sup>69</sup>	31.47 <sup>28</sup>
27.1	9.386 <sup>14</sup>	24.61 <sup>53</sup>	44.661 <sup>14</sup>	60.11 <sup>32</sup>	55.446 <sup>19</sup>	31.19 <sup>18</sup>
Nov. 6.0	9.372 <sup>40</sup>	24.08 <sup>39</sup>	44.647 <sup>36</sup>	59.79 <sup>21</sup>	55.427 <sup>29</sup>	31.01 <sup>0</sup>
16.0	9.412 <sup>96</sup>	23.69 <sup>23</sup>	44.683 <sup>91</sup>	59.58 <sup>1</sup>	55.456 <sup>87</sup>	31.01 <sup>15</sup>
26.0	9.508 <sup>150</sup>	23.46 <sup>2</sup>	44.774 <sup>144</sup>	59.59 <sup>18</sup>	55.543 <sup>134</sup>	31.16 <sup>33</sup>
Dec. 6.0	9.658 <sup>201</sup>	23.44 <sup>18</sup>	44.918 <sup>195</sup>	59.77 <sup>37</sup>	55.677 <sup>188</sup>	31.49 <sup>55</sup>
15.9	9.859 <sup>246</sup>	23.62 <sup>39</sup>	45.113 <sup>237</sup>	60.14 <sup>60</sup>	55.865 <sup>228</sup>	32.04 <sup>71</sup>
25.9	10.105 <sup>282</sup>	24.01 <sup>60</sup>	45.350 <sup>275</sup>	60.74 <sup>76</sup>	56.093 <sup>264</sup>	32.75 <sup>85</sup>
35.9	10.387	24.61	45.625	61.50	56.357	33.60
Mean Place	7.723	27.00	43.046	63.14	53.861	34.97
Sec $\delta$ , Tan $\delta$	1.112	-0.485	1.082	-0.412	1.061	-0.356
L $\alpha$ , L $\delta$	+0.01	-0.2	+0.01	-0.2	+0.01	-0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.02	-0.9	-0.01	-0.9	-0.01	-0.9
AUTHORITY	A. N.		A. E.		A. E.	

# 380 APPARENT PLACES OF STARS, 1922

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		δ Ophiuchi. Mag. 3.0		γ <sup>2</sup> Normæ. Mag. 4.1		ε Ophiuchi. Mag. 3.3	
		R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
		<sup>h</sup> 16 <sup>m</sup> 10	<sup>°</sup> 3 <sup>'</sup> 29	<sup>h</sup> 16 <sup>m</sup> 13	<sup>°</sup> 49 <sup>'</sup> 57	<sup>h</sup> 16 <sup>m</sup> 14	<sup>°</sup> 4 <sup>'</sup> 30
Jan.	0.9	14.583 <sup>s</sup> <sub>257</sub>	33.24 <sub>161</sub>	58.605 <sup>s</sup> <sub>378</sub>	40.43 <sub>60</sub>	10.740 <sup>s</sup> <sub>256</sub>	5.10 <sub>157</sub>
	10.9	14.840 <sub>277</sub>	34.85 <sub>157</sub>	58.983 <sub>414</sub>	39.83 <sub>31</sub>	10.996 <sub>277</sub>	6.67 <sub>153</sub>
	20.8	15.117 <sub>295</sub>	36.42 <sub>150</sub>	59.397 <sub>437</sub>	39.52 <sub>3</sub>	11.273 <sub>294</sub>	8.20 <sub>144</sub>
	30.8	15.412 <sub>299</sub>	37.92 <sub>133</sub>	59.834 <sub>448</sub>	39.55 <sub>32</sub>	11.567 <sub>300</sub>	9.64 <sub>131</sub>
Feb.	9.8	15.711 <sub>300</sub>	39.25 <sub>114</sub>	60.282 <sub>449</sub>	39.87 <sub>61</sub>	11.867 <sub>299</sub>	10.95 <sub>112</sub>
	19.8	16.011 <sub>292</sub>	40.39 <sub>87</sub>	60.731 <sub>443</sub>	40.48 <sub>85</sub>	12.166 <sub>293</sub>	12.07 <sub>88</sub>
Mar.	1.7	16.303 <sub>281</sub>	41.26 <sub>61</sub>	61.174 <sub>429</sub>	41.33 <sub>106</sub>	12.459 <sub>283</sub>	12.95 <sub>62</sub>
	11.7	16.584 <sub>268</sub>	41.87 <sub>37</sub>	61.603 <sub>409</sub>	42.39 <sub>127</sub>	12.742 <sub>268</sub>	13.57 <sub>36</sub>
	21.7	16.852 <sub>247</sub>	42.24 <sub>7</sub>	62.012 <sub>381</sub>	43.66 <sub>142</sub>	13.010 <sub>252</sub>	13.93 <sub>9</sub>
	31.7	17.099 <sub>226</sub>	42.31 <sub>16</sub>	62.393 <sub>350</sub>	45.08 <sub>156</sub>	13.262 <sub>229</sub>	14.02 <sub>13</sub>
Apr.	10.6	17.325 <sub>204</sub>	42.15 <sub>40</sub>	62.743 <sub>318</sub>	46.64 <sub>165</sub>	13.491 <sub>207</sub>	13.89 <sub>36</sub>
	20.6	17.529 <sub>176</sub>	41.75 <sub>57</sub>	63.061 <sub>278</sub>	48.29 <sub>174</sub>	13.698 <sub>182</sub>	13.53 <sub>54</sub>
	30.6	17.705 <sub>154</sub>	41.18 <sub>72</sub>	63.339 <sub>238</sub>	50.03 <sub>178</sub>	13.880 <sub>155</sub>	12.99 <sub>67</sub>
May	10.6	17.859 <sub>123</sub>	40.46 <sub>83</sub>	63.577 <sub>191</sub>	51.81 <sub>180</sub>	14.035 <sub>129</sub>	12.32 <sub>80</sub>
	20.5	17.982 <sub>93</sub>	39.63 <sub>88</sub>	63.768 <sub>144</sub>	53.61 <sub>179</sub>	14.164 <sub>97</sub>	11.52 <sub>84</sub>
	30.5	18.075 <sub>60</sub>	38.75 <sub>92</sub>	63.912 <sub>93</sub>	55.40 <sub>172</sub>	14.261 <sub>66</sub>	10.68 <sub>88</sub>
June	9.5	18.135 <sub>29</sub>	37.83 <sub>91</sub>	64.005 <sub>38</sub>	57.12 <sub>164</sub>	14.327 <sub>34</sub>	9.80 <sub>87</sub>
	19.4	18.164 <sub>6</sub>	36.92 <sub>88</sub>	64.043 <sub>16</sub>	58.76 <sub>150</sub>	14.361 <sub>2</sub>	8.93 <sub>85</sub>
	29.4	18.158 <sub>38</sub>	36.04 <sub>82</sub>	64.027 <sub>70</sub>	60.26 <sub>133</sub>	14.359 <sub>34</sub>	8.08 <sub>78</sub>
July	9.4	18.120 <sub>70</sub>	35.22 <sub>75</sub>	63.957 <sub>120</sub>	61.59 <sub>113</sub>	14.325 <sub>67</sub>	7.30 <sub>73</sub>
	19.4	18.050 <sub>101</sub>	34.47 <sub>67</sub>	63.837 <sub>168</sub>	62.72 <sub>86</sub>	14.258 <sub>98</sub>	6.57 <sub>64</sub>
	29.3	17.949 <sub>126</sub>	33.80 <sub>58</sub>	63.669 <sub>211</sub>	63.58 <sub>59</sub>	14.160 <sub>124</sub>	5.93 <sub>55</sub>
Aug.	8.3	17.823 <sub>149</sub>	33.22 <sub>46</sub>	63.458 <sub>243</sub>	64.17 <sub>28</sub>	14.036 <sub>148</sub>	5.38 <sub>47</sub>
	18.3	17.674 <sub>162</sub>	32.76 <sub>36</sub>	63.215 <sub>266</sub>	64.45 <sub>4</sub>	13.888 <sub>161</sub>	4.91 <sub>36</sub>
	28.2	17.512 <sub>170</sub>	32.40 <sub>24</sub>	62.949 <sub>276</sub>	64.41 <sub>39</sub>	13.727 <sub>171</sub>	4.55 <sub>25</sub>
Sept.	7.2	17.342 <sub>169</sub>	32.16 <sub>11</sub>	62.673 <sub>275</sub>	64.02 <sub>71</sub>	13.556 <sub>171</sub>	4.30 <sub>13</sub>
	17.2	17.173 <sub>160</sub>	32.05 <sub>4</sub>	62.398 <sub>258</sub>	63.31 <sub>103</sub>	13.385 <sub>162</sub>	4.17 <sub>0</sub>
	27.2	17.013 <sub>140</sub>	32.09 <sub>18</sub>	62.140 <sub>226</sub>	62.28 <sub>128</sub>	13.223 <sub>143</sub>	4.17 <sub>14</sub>
Oct.	7.1	16.873 <sub>115</sub>	32.27 <sub>36</sub>	61.914 <sub>182</sub>	61.00 <sub>151</sub>	13.080 <sub>115</sub>	4.31 <sub>29</sub>
	17.1	16.758 <sub>73</sub>	32.63 <sub>56</sub>	61.732 <sub>125</sub>	59.49 <sub>166</sub>	12.965 <sub>78</sub>	4.60 <sub>48</sub>
	27.1	16.685 <sub>32</sub>	33.19 <sub>73</sub>	61.607 <sub>60</sub>	57.83 <sub>173</sub>	12.887 <sub>36</sub>	5.08 <sub>68</sub>
Nov.	6.1	16.653 <sub>13</sub>	33.92 <sub>94</sub>	61.547 <sub>15</sub>	56.10 <sub>176</sub>	12.851 <sub>12</sub>	5.76 <sub>86</sub>
	16.0	16.666 <sub>67</sub>	34.86 <sub>113</sub>	61.562 <sub>88</sub>	54.34 <sub>168</sub>	12.863 <sub>62</sub>	6.62 <sub>106</sub>
	26.0	16.733 <sub>112</sub>	35.99 <sub>130</sub>	61.650 <sub>164</sub>	52.66 <sub>153</sub>	12.925 <sub>112</sub>	7.68 <sub>123</sub>
Dec.	6.0	16.845 <sub>162</sub>	37.29 <sub>146</sub>	61.814 <sub>233</sub>	51.13 <sub>134</sub>	13.037 <sub>157</sub>	8.91 <sub>137</sub>
	15.9	17.007 <sub>202</sub>	38.75 <sub>158</sub>	62.047 <sub>297</sub>	49.79 <sub>107</sub>	13.194 <sub>202</sub>	10.28 <sub>151</sub>
	25.9	17.209 <sub>240</sub>	40.33 <sub>162</sub>	62.344 <sub>351</sub>	48.72 <sub>79</sub>	13.396 <sub>238</sub>	11.79 <sub>157</sub>
	35.9	17.449	41.95	62.695	47.93	13.634	13.36
Mean Place		15.365	40.16	59.563	56.39	11.532	12.34
Sec δ, Tan δ		1.002	-0.061	1.555	-1.190	1.003	-0.079
L α, L δ		0.00	-0.2	+0.03	-0.2	0.00	-0.2
ω α, ω δ		0.00	-0.9	-0.04	-0.9	0.00	-0.9
AUTHORITY		A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 381

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	σ Scorpii. Mag. 3.1		γ Herculis. Mag. 3.8		η Draconis. Mag. 2.9		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.	
	<sup>h</sup> 16 <sup>m</sup> 16	<sup>°</sup> 25 <sup>'</sup> 24	<sup>h</sup> 16 <sup>m</sup> 18	<sup>°</sup> 19 <sup>'</sup> 19	<sup>h</sup> 16 <sup>m</sup> 22	<sup>°</sup> 61 <sup>'</sup> 41	
Jan.	0.9 10.9 20.9 30.8	25.864 <sup>s</sup> <sub>284</sub> 26.148 <sup>s</sup> <sub>308</sub> 26.456 <sup>s</sup> <sub>324</sub> 26.780 <sup>s</sup> <sub>332</sub>	13.45 <sup>"</sup> <sub>56</sub> 14.01 <sup>"</sup> <sub>69</sub> 14.70 <sup>"</sup> <sub>80</sub> 15.50 <sup>"</sup> <sub>88</sub>	27.670 <sup>s</sup> <sub>244</sub> 27.914 <sup>s</sup> <sub>273</sub> 28.187 <sup>s</sup> <sub>290</sub> 28.477 <sup>s</sup> <sub>299</sub>	69.68 <sup>"</sup> <sub>249</sub> 67.19 <sup>"</sup> <sub>229</sub> 64.90 <sup>"</sup> <sub>199</sub> 62.91 <sup>"</sup> <sub>164</sub>	53.13 <sup>s</sup> <sub>34</sub> 53.47 <sup>s</sup> <sub>41</sub> 53.88 <sup>s</sup> <sub>45</sub> 54.33 <sup>s</sup> <sub>50</sub>	22.85 <sup>"</sup> <sub>324</sub> 19.61 <sup>"</sup> <sub>282</sub> 16.79 <sup>"</sup> <sub>233</sub> 14.46 <sup>"</sup> <sub>176</sub>
Feb.	9.8 19.8	27.112 <sup>s</sup> <sub>332</sub> 27.444 <sup>s</sup> <sub>325</sub>	16.38 <sup>"</sup> <sub>90</sub> 17.28 <sup>"</sup> <sub>90</sub>	28.776 <sup>s</sup> <sub>304</sub> 29.080 <sup>s</sup> <sub>299</sub>	61.27 <sup>"</sup> <sub>123</sub> 60.04 <sup>"</sup> <sub>76</sub>	54.83 <sup>s</sup> <sub>51</sub> 55.34 <sup>s</sup> <sub>52</sub>	12.70 <sup>"</sup> <sub>112</sub> 11.58 <sup>"</sup> <sub>45</sub>
Mar.	1.7 11.7 21.7 31.7	27.769 <sup>s</sup> <sub>313</sub> 28.082 <sup>s</sup> <sub>298</sub> 28.380 <sup>s</sup> <sub>280</sub> 28.660 <sup>s</sup> <sub>258</sub>	18.18 <sup>"</sup> <sub>86</sub> 19.04 <sup>"</sup> <sub>81</sub> 19.85 <sup>"</sup> <sub>75</sub> 20.60 <sup>"</sup> <sub>67</sub>	29.379 <sup>s</sup> <sub>289</sub> 29.668 <sup>s</sup> <sub>274</sub> 29.942 <sup>s</sup> <sub>256</sub> 30.198 <sup>s</sup> <sub>231</sub>	59.28 <sup>"</sup> <sub>29</sub> 58.99 <sup>"</sup> <sub>20</sub> 59.19 <sup>"</sup> <sub>64</sub> 59.83 <sup>"</sup> <sub>104</sub>	55.86 <sup>s</sup> <sub>50</sub> 56.36 <sup>s</sup> <sub>48</sub> 56.84 <sup>s</sup> <sub>44</sub> 57.28 <sup>s</sup> <sub>39</sub>	11.13 <sup>"</sup> <sub>25</sub> 11.38 <sup>"</sup> <sub>91</sub> 12.29 <sup>"</sup> <sub>151</sub> 13.80 <sup>"</sup> <sub>206</sub>
Apr.	10.6 20.6 30.6	28.918 <sup>s</sup> <sub>234</sub> 29.152 <sup>s</sup> <sub>209</sub> 29.361 <sup>s</sup> <sub>180</sub>	21.27 <sup>"</sup> <sub>60</sub> 21.87 <sup>"</sup> <sub>54</sub> 22.41 <sup>"</sup> <sub>48</sub>	30.429 <sup>s</sup> <sub>206</sub> 30.635 <sup>s</sup> <sub>180</sub> 30.815 <sup>s</sup> <sub>150</sub>	60.87 <sup>"</sup> <sub>141</sub> 62.28 <sup>"</sup> <sub>167</sub> 63.95 <sup>"</sup> <sub>190</sub>	57.67 <sup>s</sup> <sub>34</sub> 58.01 <sup>s</sup> <sub>26</sub> 58.27 <sup>s</sup> <sub>20</sub>	15.86 <sup>"</sup> <sub>249</sub> 18.35 <sup>"</sup> <sub>286</sub> 21.21 <sup>"</sup> <sub>310</sub>
May	10.6 20.5 30.5	29.541 <sup>s</sup> <sub>149</sub> 29.690 <sup>s</sup> <sub>117</sub> 29.807 <sup>s</sup> <sub>80</sub>	22.89 <sup>"</sup> <sub>43</sub> 23.32 <sup>"</sup> <sub>38</sub> 23.70 <sup>"</sup> <sub>33</sub>	30.965 <sup>s</sup> <sub>119</sub> 31.084 <sup>s</sup> <sub>86</sub> 31.170 <sup>s</sup> <sub>48</sub>	65.85 <sup>"</sup> <sub>203</sub> 67.88 <sup>"</sup> <sub>209</sub> 69.97 <sup>"</sup> <sub>211</sub>	58.47 <sup>s</sup> <sub>12</sub> 58.59 <sup>s</sup> <sub>4</sub> 58.63 <sup>s</sup> <sub>3</sub>	24.31 <sup>"</sup> <sub>325</sub> 27.56 <sup>"</sup> <sub>329</sub> 30.85 <sup>"</sup> <sub>320</sub>
June	9.5 19.4 29.4	29.887 <sup>s</sup> <sub>44</sub> 29.931 <sup>s</sup> <sub>6</sub> 29.937 <sup>s</sup> <sub>32</sub>	24.03 <sup>"</sup> <sub>29</sub> 24.32 <sup>"</sup> <sub>24</sub> 24.56 <sup>"</sup> <sub>19</sub>	31.218 <sup>s</sup> <sub>17</sub> 31.235 <sup>s</sup> <sub>19</sub> 31.216 <sup>s</sup> <sub>54</sub>	72.08 <sup>"</sup> <sub>202</sub> 74.10 <sup>"</sup> <sub>190</sub> 76.00 <sup>"</sup> <sub>173</sub>	58.60 <sup>s</sup> <sub>10</sub> 58.50 <sup>s</sup> <sub>18</sub> 58.32 <sup>s</sup> <sub>24</sub>	34.05 <sup>"</sup> <sub>307</sub> 37.12 <sup>"</sup> <sub>283</sub> 39.95 <sup>"</sup> <sub>251</sub>
July	9.4 19.4 29.3	29.905 <sup>s</sup> <sub>70</sub> 29.835 <sup>s</sup> <sub>104</sub> 29.731 <sup>s</sup> <sub>136</sub>	24.75 <sup>"</sup> <sub>12</sub> 24.87 <sup>"</sup> <sub>3</sub> 24.90 <sup>"</sup> <sub>5</sub>	31.162 <sup>s</sup> <sub>90</sub> 31.072 <sup>s</sup> <sub>118</sub> 30.954 <sup>s</sup> <sub>145</sub>	77.73 <sup>"</sup> <sub>152</sub> 79.25 <sup>"</sup> <sub>127</sub> 80.52 <sup>"</sup> <sub>98</sub>	58.08 <sup>s</sup> <sub>29</sub> 57.79 <sup>s</sup> <sub>35</sub> 57.44 <sup>s</sup> <sub>39</sub>	42.46 <sup>"</sup> <sub>211</sub> 44.57 <sup>"</sup> <sub>169</sub> 46.26 <sup>"</sup> <sub>121</sub>
Aug.	8.3 18.3 28.2	29.595 <sup>s</sup> <sub>160</sub> 29.435 <sup>s</sup> <sub>179</sub> 29.256 <sup>s</sup> <sub>188</sub>	24.85 <sup>"</sup> <sub>14</sub> 24.71 <sup>"</sup> <sub>25</sub> 24.46 <sup>"</sup> <sub>35</sub>	30.809 <sup>s</sup> <sub>167</sub> 30.642 <sup>s</sup> <sub>183</sub> 30.459 <sup>s</sup> <sub>194</sub>	81.50 <sup>"</sup> <sub>69</sub> 82.19 <sup>"</sup> <sub>39</sub> 82.58 <sup>"</sup> <sub>8</sub>	57.05 <sup>s</sup> <sub>43</sub> 56.62 <sup>s</sup> <sub>44</sub> 56.18 <sup>s</sup> <sub>46</sub>	47.47 <sup>"</sup> <sub>73</sub> 48.20 <sup>"</sup> <sub>25</sub> 48.45 <sup>"</sup> <sub>32</sub>
Sept.	7.2 17.2 27.2	29.068 <sup>s</sup> <sub>188</sub> 28.880 <sup>s</sup> <sub>177</sub> 28.703 <sup>s</sup> <sub>157</sub>	24.11 <sup>"</sup> <sub>44</sub> 23.67 <sup>"</sup> <sub>51</sub> 23.16 <sup>"</sup> <sub>56</sub>	30.265 <sup>s</sup> <sub>193</sub> 30.072 <sup>s</sup> <sub>182</sub> 29.890 <sup>s</sup> <sub>166</sub>	82.66 <sup>"</sup> <sub>26</sub> 82.40 <sup>"</sup> <sub>59</sub> 81.81 <sup>"</sup> <sub>92</sub>	55.72 <sup>s</sup> <sub>46</sub> 55.26 <sup>s</sup> <sub>43</sub> 54.83 <sup>s</sup> <sub>41</sub>	48.13 <sup>"</sup> <sub>83</sub> 47.30 <sup>"</sup> <sub>133</sub> 45.97 <sup>"</sup> <sub>181</sub>
Oct.	7.1 17.1 27.1	28.546 <sup>s</sup> <sub>125</sub> 28.421 <sup>s</sup> <sub>84</sub> 28.337 <sup>s</sup> <sub>37</sub>	22.60 <sup>"</sup> <sub>57</sub> 22.03 <sup>"</sup> <sub>54</sub> 21.49 <sup>"</sup> <sub>49</sub>	29.724 <sup>s</sup> <sub>137</sub> 29.587 <sup>s</sup> <sub>103</sub> 29.484 <sup>s</sup> <sub>59</sub>	80.89 <sup>"</sup> <sub>125</sub> 79.64 <sup>"</sup> <sub>155</sub> 78.09 <sup>"</sup> <sub>186</sub>	54.42 <sup>s</sup> <sub>36</sub> 54.06 <sup>s</sup> <sub>30</sub> 53.76 <sup>s</sup> <sub>24</sub>	44.16 <sup>"</sup> <sub>228</sub> 41.88 <sup>"</sup> <sub>270</sub> 39.18 <sup>"</sup> <sub>308</sub>
Nov.	6.1 16.0 26.0	28.300 <sup>s</sup> <sub>17</sub> 28.317 <sup>s</sup> <sub>71</sub> 28.388 <sup>s</sup> <sub>127</sub>	21.00 <sup>"</sup> <sub>38</sub> 20.62 <sup>"</sup> <sub>24</sub> 20.38 <sup>"</sup> <sub>7</sub>	29.425 <sup>s</sup> <sub>13</sub> 29.412 <sup>s</sup> <sub>40</sub> 29.452 <sup>s</sup> <sub>89</sub>	76.23 <sup>"</sup> <sub>213</sub> 74.10 <sup>"</sup> <sub>235</sub> 71.75 <sup>"</sup> <sub>251</sub>	53.52 <sup>s</sup> <sub>15</sub> 53.37 <sup>s</sup> <sub>6</sub> 53.31 <sup>s</sup> <sub>2</sub>	36.10 <sup>"</sup> <sub>339</sub> 32.71 <sup>"</sup> <sub>359</sub> 29.12 <sup>"</sup> <sub>373</sub>
Dec.	6.0 15.9 25.9 35.9	28.515 <sup>s</sup> <sub>179</sub> 28.694 <sup>s</sup> <sub>224</sub> 28.918 <sup>s</sup> <sub>264</sub> 29.182 <sup>s</sup>	20.31 <sup>"</sup> <sub>11</sub> 20.42 <sup>"</sup> <sub>30</sub> 20.72 <sup>"</sup> <sub>48</sub> 21.20 <sup>"</sup>	29.541 <sup>s</sup> <sub>139</sub> 29.680 <sup>s</sup> <sub>187</sub> 29.867 <sup>s</sup> <sub>223</sub> 30.090 <sup>s</sup>	69.24 <sup>"</sup> <sub>263</sub> 66.61 <sup>"</sup> <sub>265</sub> 63.96 <sup>"</sup> <sub>261</sub> 61.35 <sup>"</sup>	53.33 <sup>s</sup> <sub>12</sub> 53.45 <sup>s</sup> <sub>21</sub> 53.66 <sup>s</sup> <sub>30</sub> 53.96 <sup>s</sup>	25.39 <sup>"</sup> <sub>375</sub> 21.64 <sup>"</sup> <sub>365</sub> 17.99 <sup>"</sup> <sub>343</sub> 14.56 <sup>"</sup>
Mean Place	26.622	25.00	28.704	67.06	55.93	25.54	
Sec δ, Tan δ	1.107	-0.475	1.060	+0.351	2.109	+1.856	
L α, L δ	+0.01	-0.2	-0.01	-0.2	-0.04	-0.2	
ω α, ω δ	-0.01	-0.9	+0.01	-0.9	+0.05	-0.9	
AUTHORITY	A. N.		A. E.		A. E.		

# 382 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Scorpii. Mag. 1.2		$\beta$ Herculis. Mag. 2.8		$\lambda$ Ophiuchi. Mag. 3.9		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.	
	<sup>h</sup> 16 <sup>m</sup> 24 <sup>s</sup>	<sup>°</sup> 26 <sup>'</sup> 15 <sup>"</sup>	<sup>h</sup> 16 <sup>m</sup> 26 <sup>s</sup>	<sup>°</sup> 21 <sup>'</sup> 39 <sup>"</sup>	<sup>h</sup> 16 <sup>m</sup> 26 <sup>s</sup>	<sup>°</sup> 2 <sup>'</sup> 9 <sup>"</sup>	
Jan.	0.9 10.9 20.9 30.8	36.493 <sup>282</sup> 36.775 <sup>304</sup> 37.079 <sup>321</sup> 37.400 <sup>332</sup>	24.81 <sup>47</sup> 25.28 <sup>60</sup> 25.88 <sup>72</sup> 26.60 <sup>79</sup>	50.826 <sup>238</sup> 51.064 <sup>267</sup> 51.331 <sup>288</sup> 51.619 <sup>301</sup>	33.36 <sup>257</sup> 30.79 <sup>237</sup> 28.42 <sup>206</sup> 26.36 <sup>171</sup>	57.796 <sup>241</sup> 58.037 <sup>266</sup> 58.303 <sup>284</sup> 58.587 <sup>292</sup>	18.47 <sup>182</sup> 16.65 <sup>174</sup> 14.91 <sup>161</sup> 13.30 <sup>140</sup>
Feb.	9.8 19.8	37.732 <sup>334</sup> 38.066 <sup>330</sup>	27.39 <sup>83</sup> 28.22 <sup>83</sup>	51.920 <sup>303</sup> 52.223 <sup>304</sup>	24.65 <sup>128</sup> 23.37 <sup>77</sup>	58.879 <sup>295</sup> 59.174 <sup>291</sup>	11.90 <sup>114</sup> 10.76 <sup>85</sup>
Mar.	1.8 11.7 21.7 31.7	38.396 <sup>319</sup> 38.715 <sup>304</sup> 39.019 <sup>289</sup> 39.308 <sup>266</sup>	29.05 <sup>82</sup> 29.87 <sup>74</sup> 30.61 <sup>73</sup> 31.34 <sup>64</sup>	52.527 <sup>292</sup> 52.819 <sup>280</sup> 53.099 <sup>261</sup> 53.360 <sup>239</sup>	22.60 <sup>29</sup> 22.31 <sup>21</sup> 22.52 <sup>69</sup> 23.21 <sup>108</sup>	59.465 <sup>282</sup> 59.747 <sup>269</sup> 60.016 <sup>253</sup> 60.269 <sup>234</sup>	9.91 <sup>52</sup> 9.39 <sup>20</sup> 9.19 <sup>12</sup> 9.31 <sup>42</sup>
Apr.	10.6 20.6 30.6 10.6	39.574 <sup>243</sup> 39.817 <sup>217</sup> 40.034 <sup>189</sup> 40.223 <sup>159</sup>	31.98 <sup>59</sup> 32.57 <sup>54</sup> 33.11 <sup>48</sup> 33.59 <sup>47</sup>	53.599 <sup>215</sup> 53.814 <sup>187</sup> 54.001 <sup>158</sup> 54.159 <sup>126</sup>	24.29 <sup>147</sup> 25.76 <sup>177</sup> 27.53 <sup>199</sup> 29.52 <sup>215</sup>	60.503 <sup>213</sup> 60.716 <sup>189</sup> 60.905 <sup>163</sup> 61.068 <sup>135</sup>	9.73 <sup>68</sup> 10.41 <sup>90</sup> 11.31 <sup>106</sup> 12.37 <sup>119</sup>
May	20.5 30.5 June 9.5 19.5	40.382 <sup>125</sup> 40.507 <sup>89</sup> 40.596 <sup>53</sup> 40.649 <sup>12</sup>	34.06 <sup>41</sup> 34.47 <sup>37</sup> 34.84 <sup>32</sup> 35.16 <sup>29</sup>	54.285 <sup>91</sup> 54.376 <sup>58</sup> 54.434 <sup>19</sup> 54.453 <sup>17</sup>	31.67 <sup>222</sup> 33.89 <sup>221</sup> 36.10 <sup>216</sup> 38.26 <sup>201</sup>	61.203 <sup>105</sup> 61.308 <sup>73</sup> 61.381 <sup>40</sup> 61.421 <sup>5</sup>	13.56 <sup>125</sup> 14.81 <sup>127</sup> 16.08 <sup>124</sup> 17.32 <sup>119</sup>
July	29.4 9.4 19.4 29.3	40.661 <sup>27</sup> 40.634 <sup>65</sup> 40.569 <sup>102</sup> 40.467 <sup>131</sup>	35.45 <sup>23</sup> 35.68 <sup>16</sup> 35.84 <sup>11</sup> 35.95 <sup>0</sup>	54.436 <sup>51</sup> 54.385 <sup>88</sup> 54.297 <sup>120</sup> 54.177 <sup>145</sup>	40.27 <sup>185</sup> 42.12 <sup>164</sup> 43.76 <sup>138</sup> 45.14 <sup>107</sup>	61.426 <sup>29</sup> 61.397 <sup>63</sup> 61.334 <sup>95</sup> 61.239 <sup>123</sup>	18.51 <sup>110</sup> 19.61 <sup>99</sup> 20.60 <sup>86</sup> 21.46 <sup>72</sup>
Aug.	8.3 18.3 28.3 7.2	40.336 <sup>160</sup> 40.176 <sup>179</sup> 39.997 <sup>189</sup> 39.808 <sup>192</sup>	35.95 <sup>10</sup> 35.85 <sup>18</sup> 35.67 <sup>31</sup> 35.36 <sup>42</sup>	54.032 <sup>170</sup> 53.862 <sup>190</sup> 53.672 <sup>196</sup> 53.476 <sup>199</sup>	46.21 <sup>75</sup> 46.96 <sup>46</sup> 47.42 <sup>11</sup> 47.53 <sup>26</sup>	61.116 <sup>146</sup> 60.970 <sup>164</sup> 60.806 <sup>174</sup> 60.632 <sup>176</sup>	22.18 <sup>56</sup> 22.74 <sup>39</sup> 23.13 <sup>22</sup> 23.35 <sup>3</sup>
Sept.	17.2 27.2 Oct. 7.1 17.1	39.616 <sup>181</sup> 39.435 <sup>162</sup> 39.273 <sup>133</sup> 39.140 <sup>90</sup>	34.94 <sup>49</sup> 34.45 <sup>56</sup> 33.89 <sup>55</sup> 33.34 <sup>57</sup>	53.277 <sup>192</sup> 53.085 <sup>176</sup> 52.909 <sup>148</sup> 52.761 <sup>113</sup>	47.27 <sup>57</sup> 46.70 <sup>94</sup> 45.76 <sup>129</sup> 44.47 <sup>159</sup>	60.456 <sup>169</sup> 60.287 <sup>152</sup> 60.135 <sup>126</sup> 60.009 <sup>92</sup>	23.38 <sup>15</sup> 23.23 <sup>35</sup> 22.88 <sup>57</sup> 22.31 <sup>78</sup>
Nov.	27.1 6.1 16.0 26.0	39.050 <sup>47</sup> 39.003 <sup>8</sup> 39.011 <sup>64</sup> 39.075 <sup>118</sup>	32.77 <sup>54</sup> 32.23 <sup>41</sup> 31.82 <sup>30</sup> 31.52 <sup>14</sup>	52.648 <sup>71</sup> 52.577 <sup>23</sup> 52.554 <sup>28</sup> 52.582 <sup>79</sup>	42.88 <sup>194</sup> 40.94 <sup>221</sup> 38.73 <sup>245</sup> 36.28 <sup>258</sup>	59.917 <sup>51</sup> 59.866 <sup>4</sup> 59.862 <sup>45</sup> 59.907 <sup>94</sup>	21.53 <sup>99</sup> 20.54 <sup>122</sup> 19.32 <sup>141</sup> 17.91 <sup>159</sup>
Dec.	6.0 16.0 25.9 35.9	39.193 <sup>172</sup> 39.365 <sup>217</sup> 39.582 <sup>259</sup> 39.841	31.38 <sup>0</sup> 31.38 <sup>21</sup> 31.59 <sup>38</sup> 31.97	52.661 <sup>130</sup> 52.791 <sup>174</sup> 52.965 <sup>219</sup> 53.184	33.70 <sup>272</sup> 30.98 <sup>275</sup> 28.23 <sup>269</sup> 25.54	60.001 <sup>141</sup> 60.142 <sup>185</sup> 60.327 <sup>222</sup> 60.549	16.32 <sup>174</sup> 14.58 <sup>182</sup> 12.76 <sup>186</sup> 10.90
Mean Place Sec $\delta$ , Tan $\delta$	37.297 1.115	36.48 -0.493	51.919 1.076	30.72 +0.397	58.670 1.001	12.27 +0.038	
L $\alpha$ , L $\delta$ $\omega$ $\alpha$ , $\omega$ $\delta$	+0.01 -0.01	-0.2 -0.9	-0.01 +0.01	-0.2 -0.9	0.00 0.00	-0.2 -0.9	
AUTHORITY	A. E.		A. E.		A. N.		

# APPARENT PLACES OF STARS, 1922. 383

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\tau$ Scorpii. Mag. 2.9		$\zeta$ Ophiuchi. Mag. 2.7		24 Scorpii. Mag. 5.0		
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.	
	<sup>h</sup> 16 <sup>m</sup> 31	<sup>°</sup> 28 <sup>'</sup> 3	<sup>h</sup> 16 <sup>m</sup> 32	<sup>°</sup> 10 <sup>'</sup> 24	<sup>h</sup> 16 <sup>m</sup> 37	<sup>°</sup> 17 <sup>'</sup> 35	
Jan.	0.9 10.9 20.9 30.8	0.550 <sup>278</sup> 0.828 <sup>306</sup> 1.134 <sup>324</sup> 1.458 <sup>335</sup>	8.00 8.32 <sup>32</sup> 8.79 <sup>47</sup> 9.39 <sup>69</sup>	50.866 <sup>246</sup> 51.112 <sup>274</sup> 51.386 <sup>288</sup> 51.674 <sup>300</sup>	28.13 <sup>121</sup> 29.34 <sup>124</sup> 30.58 <sup>120</sup> 31.78 <sup>112</sup>	2.714 <sup>254</sup> 2.968 <sup>279</sup> 3.247 <sup>299</sup> 3.546 <sup>309</sup>	22.62 <sup>83</sup> 23.45 <sup>90</sup> 24.35 <sup>93</sup> 25.28 <sup>91</sup>
Feb.	9.8 19.8	1.793 <sup>337</sup> 2.130 <sup>333</sup>	10.08 <sup>75</sup> 10.83 <sup>77</sup>	51.974 <sup>303</sup> 52.277 <sup>300</sup>	32.90 <sup>100</sup> 33.90 <sup>80</sup>	3.855 <sup>311</sup> 4.166 <sup>310</sup>	26.19 <sup>87</sup> 27.06 <sup>78</sup>
Mar.	1.8 11.7 21.7 31.7	2.463 <sup>325</sup> 2.788 <sup>311</sup> 3.099 <sup>294</sup> 3.393 <sup>274</sup>	11.60 <sup>77</sup> 12.37 <sup>75</sup> 13.12 <sup>71</sup> 13.83 <sup>67</sup>	52.577 <sup>291</sup> 52.868 <sup>279</sup> 53.147 <sup>268</sup> 53.415 <sup>245</sup>	34.70 <sup>63</sup> 35.33 <sup>42</sup> 35.75 <sup>23</sup> 35.98 <sup>3</sup>	4.476 <sup>302</sup> 4.778 <sup>290</sup> 5.068 <sup>275</sup> 5.343 <sup>258</sup>	27.84 <sup>66</sup> 28.50 <sup>53</sup> 29.03 <sup>40</sup> 29.43 <sup>26</sup>
Apr.	10.6 20.6 30.6	3.667 <sup>252</sup> 3.919 <sup>227</sup> 4.146 <sup>199</sup>	14.50 <sup>63</sup> 15.13 <sup>58</sup> 15.71 <sup>56</sup>	53.660 <sup>227</sup> 53.887 <sup>201</sup> 54.088 <sup>178</sup>	36.01 <sup>14</sup> 35.87 <sup>29</sup> 35.58 <sup>42</sup>	5.601 <sup>237</sup> 5.838 <sup>214</sup> 6.052 <sup>189</sup>	29.69 <sup>14</sup> 29.83 <sup>4</sup> 29.87 <sup>11</sup>
May	10.6 20.5 30.5	4.345 <sup>168</sup> 4.513 <sup>134</sup> 4.647 <sup>98</sup>	16.27 <sup>52</sup> 16.79 <sup>49</sup> 17.28 <sup>46</sup>	54.266 <sup>149</sup> 54.415 <sup>121</sup> 54.536 <sup>86</sup>	35.16 <sup>49</sup> 34.67 <sup>56</sup> 34.11 <sup>58</sup>	6.241 <sup>161</sup> 6.402 <sup>130</sup> 6.532 <sup>96</sup>	29.83 <sup>4</sup> 29.72 <sup>14</sup> 29.58 <sup>17</sup>
June	9.5 19.5 29.4	4.745 <sup>59</sup> 4.804 <sup>20</sup> 4.824 <sup>22</sup>	17.74 <sup>43</sup> 18.17 <sup>38</sup> 18.55 <sup>34</sup>	54.622 <sup>52</sup> 54.674 <sup>16</sup> 54.690 <sup>17</sup>	33.53 <sup>59</sup> 32.94 <sup>57</sup> 32.37 <sup>56</sup>	6.628 <sup>60</sup> 6.688 <sup>24</sup> 6.712 <sup>14</sup>	29.41 <sup>19</sup> 29.22 <sup>19</sup> 29.03 <sup>19</sup>
July	9.4 19.4 29.3	4.802 <sup>61</sup> 4.741 <sup>98</sup> 4.643 <sup>132</sup>	18.89 <sup>27</sup> 19.16 <sup>19</sup> 19.35 <sup>8</sup>	54.673 <sup>54</sup> 54.619 <sup>90</sup> 54.529 <sup>118</sup>	31.81 <sup>51</sup> 31.30 <sup>45</sup> 30.85 <sup>42</sup>	6.698 <sup>52</sup> 6.646 <sup>86</sup> 6.560 <sup>119</sup>	28.84 <sup>19</sup> 28.65 <sup>19</sup> 28.46 <sup>21</sup>
Aug.	8.3 18.3 28.3	4.511 <sup>161</sup> 4.350 <sup>181</sup> 4.169 <sup>194</sup>	19.43 <sup>3</sup> 19.40 <sup>15</sup> 19.25 <sup>27</sup>	54.411 <sup>144</sup> 54.267 <sup>159</sup> 54.108 <sup>174</sup>	30.43 <sup>36</sup> 30.07 <sup>33</sup> 29.74 <sup>26</sup>	6.441 <sup>146</sup> 6.295 <sup>166</sup> 6.129 <sup>179</sup>	28.25 <sup>22</sup> 28.03 <sup>23</sup> 27.80 <sup>25</sup>
Sept.	7.2 17.2 27.2	3.975 <sup>197</sup> 3.778 <sup>188</sup> 3.590 <sup>169</sup>	18.98 <sup>39</sup> 18.59 <sup>49</sup> 18.10 <sup>57</sup>	53.934 <sup>178</sup> 53.756 <sup>169</sup> 53.587 <sup>153</sup>	29.48 <sup>20</sup> 29.28 <sup>14</sup> 29.14 <sup>3</sup>	5.950 <sup>183</sup> 5.767 <sup>176</sup> 5.591 <sup>159</sup>	27.55 <sup>27</sup> 27.28 <sup>26</sup> 27.02 <sup>25</sup>
Oct.	7.1 17.1 27.1	3.421 <sup>138</sup> 3.283 <sup>100</sup> 3.183 <sup>52</sup>	17.53 <sup>63</sup> 16.90 <sup>63</sup> 16.27 <sup>61</sup>	53.434 <sup>125</sup> 53.309 <sup>93</sup> 53.216 <sup>50</sup>	29.11 <sup>6</sup> 29.17 <sup>16</sup> 29.33 <sup>34</sup>	5.432 <sup>133</sup> 5.299 <sup>98</sup> 5.201 <sup>54</sup>	26.77 <sup>21</sup> 26.56 <sup>14</sup> 26.42 <sup>5</sup>
Nov.	6.1 16.0 26.0	3.131 <sup>2</sup> 3.133 <sup>57</sup> 3.190 <sup>114</sup>	15.66 <sup>53</sup> 15.13 <sup>42</sup> 14.71 <sup>28</sup>	53.166 <sup>6</sup> 53.160 <sup>49</sup> 53.209 <sup>96</sup>	29.67 <sup>51</sup> 30.18 <sup>66</sup> 30.84 <sup>83</sup>	5.147 <sup>5</sup> 5.142 <sup>47</sup> 5.189 <sup>99</sup>	26.37 <sup>7</sup> 26.44 <sup>21</sup> 26.65 <sup>36</sup>
Dec.	6.0 16.0 25.9 35.9	3.304 <sup>167</sup> 3.471 <sup>215</sup> 3.686 <sup>256</sup> 3.942	14.43 <sup>11</sup> 14.32 <sup>6</sup> 14.38 <sup>25</sup> 14.63	53.305 <sup>147</sup> 53.452 <sup>189</sup> 53.641 <sup>228</sup> 53.869	31.67 <sup>98</sup> 32.65 <sup>109</sup> 33.74 <sup>119</sup> 34.93	5.288 <sup>148</sup> 5.436 <sup>194</sup> 5.630 <sup>233</sup> 5.863	27.01 <sup>52</sup> 27.53 <sup>66</sup> 28.19 <sup>80</sup> 28.99
Mean Place	1.386	19.91	51.700	36.81	3.553	32.63	
Sec $\delta$ , Tan $\delta$	1.133	-0.533	1.017	-0.184	1.049	-0.317	
L $\alpha$ , L $\delta$	+0.01	-0.2	0.00	-0.1	+0.01	-0.1	
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	-0.9	0.00	-0.9	-0.01	-0.9	
AUTHORITY	A. N.		A. E.		A. N.		

# 384 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ζ Herculis. Mag. 3.0		η Herculis. Mag. 3.6		α Triang. Aust. Mag. 1.9		
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.	
	<sup>h</sup> 16 <sup>m</sup> 38	<sup>°</sup> 31 <sup>'</sup> 44	<sup>h</sup> 16 <sup>m</sup> 40	<sup>°</sup> 39 <sup>'</sup> 3	<sup>h</sup> 16 <sup>m</sup> 40	<sup>°</sup> 68 <sup>'</sup> 52	
Jan.	0.9 10.9 20.9 30.8	19.412 <sup>232</sup> 19.644 <sup>268</sup> 19.912 <sup>293</sup> 20.205 <sup>310</sup>	37.59 <sup>288</sup> 34.71 <sup>263</sup> 32.08 <sup>228</sup> 29.80 <sup>185</sup>	11.751 <sup>240</sup> 11.991 <sup>276</sup> 12.267 <sup>308</sup> 12.575 <sup>330</sup>	71.99 <sup>308</sup> 68.91 <sup>278</sup> 66.13 <sup>240</sup> 63.73 <sup>193</sup>	21.24 <sup>57</sup> 21.81 <sup>65</sup> 22.46 <sup>70</sup> 23.16 <sup>74</sup>	54.78 <sup>171</sup> 53.07 <sup>133</sup> 51.74 <sup>91</sup> 50.83 <sup>53</sup>
Feb.	9.8 19.8	20.515 <sup>319</sup> 20.834 <sup>320</sup>	27.95 <sup>134</sup> 26.61 <sup>80</sup>	12.905 <sup>341</sup> 13.246 <sup>344</sup>	61.80 <sup>139</sup> 60.41 <sup>78</sup>	23.90 <sup>75</sup> 24.65 <sup>77</sup>	50.30 <sup>8</sup> 50.22 <sup>33</sup>
Mar.	1.8 11.7 21.7 31.7	21.154 <sup>313</sup> 21.467 <sup>301</sup> 21.768 <sup>282</sup> 22.050 <sup>260</sup>	25.81 <sup>23</sup> 25.58 <sup>33</sup> 25.91 <sup>87</sup> 26.78 <sup>136</sup>	13.590 <sup>337</sup> 13.927 <sup>324</sup> 14.251 <sup>304</sup> 14.555 <sup>278</sup>	59.63 <sup>18</sup> 59.45 <sup>39</sup> 59.84 <sup>102</sup> 60.86 <sup>151</sup>	25.42 <sup>75</sup> 26.17 <sup>73</sup> 26.90 <sup>69</sup> 27.59 <sup>64</sup>	50.55 <sup>67</sup> 51.22 <sup>109</sup> 52.31 <sup>140</sup> 53.71 <sup>169</sup>
Apr.	10.6 20.6 30.6	22.310 <sup>233</sup> 22.543 <sup>203</sup> 22.746 <sup>170</sup>	28.14 <sup>179</sup> 29.93 <sup>213</sup> 32.06 <sup>240</sup>	14.833 <sup>249</sup> 15.082 <sup>218</sup> 15.300 <sup>177</sup>	62.37 <sup>197</sup> 64.34 <sup>233</sup> 66.67 <sup>259</sup>	28.23 <sup>59</sup> 28.82 <sup>52</sup> 29.34 <sup>45</sup>	55.40 <sup>199</sup> 57.39 <sup>217</sup> 59.56 <sup>238</sup>
May	10.6 20.5 30.5	22.916 <sup>134</sup> 23.050 <sup>96</sup> 23.146 <sup>57</sup>	34.46 <sup>257</sup> 37.03 <sup>265</sup> 39.68 <sup>266</sup>	15.477 <sup>136</sup> 15.613 <sup>96</sup> 15.709 <sup>49</sup>	69.26 <sup>280</sup> 72.06 <sup>288</sup> 74.94 <sup>286</sup>	29.79 <sup>36</sup> 30.15 <sup>28</sup> 30.43 <sup>18</sup>	61.94 <sup>249</sup> 64.43 <sup>257</sup> 67.00 <sup>259</sup>
June	9.5 19.5 29.4	23.203 <sup>17</sup> 23.220 <sup>24</sup> 23.196 <sup>64</sup>	42.34 <sup>258</sup> 44.92 <sup>243</sup> 47.35 <sup>223</sup>	15.758 <sup>6</sup> 15.764 <sup>37</sup> 15.727 <sup>82</sup>	77.80 <sup>281</sup> 80.61 <sup>264</sup> 83.25 <sup>241</sup>	30.61 <sup>8</sup> 30.69 <sup>2</sup> 30.67 <sup>13</sup>	69.59 <sup>252</sup> 72.11 <sup>241</sup> 74.52 <sup>225</sup>
July	9.4 19.4 29.3	23.132 <sup>102</sup> 23.030 <sup>138</sup> 22.892 <sup>169</sup>	49.58 <sup>196</sup> 51.54 <sup>164</sup> 53.18 <sup>131</sup>	15.645 <sup>121</sup> 15.524 <sup>161</sup> 15.363 <sup>195</sup>	85.66 <sup>210</sup> 87.76 <sup>175</sup> 89.51 <sup>141</sup>	30.54 <sup>21</sup> 30.33 <sup>31</sup> 30.02 <sup>39</sup>	76.77 <sup>199</sup> 78.76 <sup>170</sup> 80.46 <sup>133</sup>
Aug.	8.3 18.3 28.3	22.723 <sup>195</sup> 22.528 <sup>215</sup> 22.313 <sup>226</sup>	54.49 <sup>94</sup> 55.43 <sup>54</sup> 55.97 <sup>14</sup>	15.168 <sup>224</sup> 14.944 <sup>239</sup> 14.705 <sup>253</sup>	90.92 <sup>97</sup> 91.89 <sup>54</sup> 92.43 <sup>12</sup>	29.63 <sup>46</sup> 29.17 <sup>50</sup> 28.67 <sup>52</sup>	81.79 <sup>96</sup> 82.75 <sup>48</sup> 83.23 <sup>1</sup>
Sept.	7.2 17.2 27.2	22.087 <sup>230</sup> 21.857 <sup>223</sup> 21.634 <sup>207</sup>	56.11 <sup>27</sup> 55.84 <sup>69</sup> 55.15 <sup>110</sup>	14.452 <sup>260</sup> 14.192 <sup>250</sup> 13.942 <sup>233</sup>	92.55 <sup>36</sup> 92.19 <sup>83</sup> 91.36 <sup>122</sup>	28.15 <sup>54</sup> 27.61 <sup>51</sup> 27.10 <sup>47</sup>	83.22 <sup>45</sup> 82.77 <sup>95</sup> 81.82 <sup>141</sup>
Oct.	7.1 17.1 27.1	21.427 <sup>181</sup> 21.246 <sup>145</sup> 21.101 <sup>103</sup>	54.05 <sup>150</sup> 52.55 <sup>188</sup> 50.67 <sup>224</sup>	13.709 <sup>208</sup> 13.501 <sup>170</sup> 13.331 <sup>124</sup>	90.14 <sup>168</sup> 88.46 <sup>211</sup> 86.35 <sup>246</sup>	26.63 <sup>40</sup> 26.23 <sup>31</sup> 25.92 <sup>21</sup>	80.41 <sup>179</sup> 78.62 <sup>214</sup> 76.48 <sup>236</sup>
Nov.	6.1 16.0 26.0	20.998 <sup>53</sup> 20.945 <sup>1</sup> 20.946 <sup>56</sup>	48.43 <sup>254</sup> 45.89 <sup>279</sup> 43.10 <sup>299</sup>	13.207 <sup>69</sup> 13.138 <sup>14</sup> 13.124 <sup>46</sup>	83.89 <sup>281</sup> 81.08 <sup>305</sup> 78.03 <sup>323</sup>	25.71 <sup>8</sup> 25.63 <sup>4</sup> 25.67 <sup>16</sup>	74.12 <sup>252</sup> 71.60 <sup>258</sup> 69.02 <sup>255</sup>
Dec.	6.0 16.0 25.9 35.9	21.002 <sup>110</sup> 21.112 <sup>162</sup> 21.274 <sup>208</sup> 21.482 <sup>208</sup>	40.11 <sup>309</sup> 37.02 <sup>310</sup> 33.92 <sup>302</sup> 30.90 <sup>302</sup>	13.170 <sup>103</sup> 13.273 <sup>159</sup> 13.432 <sup>213</sup> 13.645 <sup>213</sup>	74.80 <sup>334</sup> 71.46 <sup>334</sup> 68.12 <sup>322</sup> 64.90 <sup>322</sup>	25.83 <sup>30</sup> 26.13 <sup>40</sup> 26.53 <sup>51</sup> 27.04 <sup>51</sup>	66.47 <sup>242</sup> 64.05 <sup>218</sup> 61.87 <sup>190</sup> 59.97 <sup>190</sup>
Mean Place	20.725	35.84	13.264	71.08	23.39	71.94	
Sec δ, Tan δ	1.176	+0.619	1.288	+0.812	2.776	-2.590	
L α, L δ	-0.02	-0.1	-0.02	-0.1	+0.06	-0.1	
ω α, ω δ	+0.01	-0.9	+0.02	-0.9	-0.06	-0.9	
AUTHORITY			A. E.		A. E.		

# APPARENT PLACES OF STARS, 1922. 385

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Scorp.ii. Mag. 2·4		ζ Aræ. Mag. 3·1		κ Ophiuchi. Mag. 3·4	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	h m 16 45	° 34 8	h m 16 52	° 55 51	h m 16 53	° 9 29
Jan. 0·9	5·481 <sup>s</sup> 281	58·60 9	7·791 <sup>s</sup> 379	52·13 <sup>s</sup> 125	57·501 <sup>s</sup> 216	48·56 <sup>s</sup> 211
10·9	5·762 <sup>s</sup> 312	58·51 11	8·170 <sup>s</sup> 427	50·88 <sup>s</sup> 97	57·717 <sup>s</sup> 246	46·45 <sup>s</sup> 197
20·9	6·074 <sup>s</sup> 336	58·62 24	8·597 <sup>s</sup> 463	49·91 <sup>s</sup> 65	57·963 <sup>s</sup> 265	44·48 <sup>s</sup> 181
30·8	6·410 <sup>s</sup> 348	58·86 42	9·060 <sup>s</sup> 490	49·26 <sup>s</sup> 32	58·228 <sup>s</sup> 282	42·67 <sup>s</sup> 155
Feb. 9·8	6·758 <sup>s</sup> 353	59·28 51	9·550 <sup>s</sup> 502	48·94 <sup>s</sup> 1	58·510 <sup>s</sup> 290	41·12 <sup>s</sup> 122
19·8	7·111 <sup>s</sup> 354	59·79 60	10·052 <sup>s</sup> 505	48·93 <sup>s</sup> 29	58·800 <sup>s</sup> 287	39·90 <sup>s</sup> 86
Mar. 1·8	7·465 <sup>s</sup> 347	60·39 69	10·557 <sup>s</sup> 500	49·22 <sup>s</sup> 57	59·087 <sup>s</sup> 286	39·04 <sup>s</sup> 47
11·7	7·812 <sup>s</sup> 335	61·08 69	11·057 <sup>s</sup> 485	49·79 <sup>s</sup> 82	59·373 <sup>s</sup> 279	38·57 <sup>s</sup> 8
21·7	8·147 <sup>s</sup> 320	61·77 75	11·542 <sup>s</sup> 467	50·61 <sup>s</sup> 107	59·652 <sup>s</sup> 265	38·49 <sup>s</sup> 33
31·7	8·467 <sup>s</sup> 301	62·52 77	12·009 <sup>s</sup> 439	51·68 <sup>s</sup> 128	59·917 <sup>s</sup> 250	38·82 <sup>s</sup> 68
Apr. 10·7	8·768 <sup>s</sup> 280	63·29 78	12·448 <sup>s</sup> 406	52·96 <sup>s</sup> 147	60·167 <sup>s</sup> 229	39·50 <sup>s</sup> 99
20·6	9·048 <sup>s</sup> 253	64·07 79	12·854 <sup>s</sup> 368	54·43 <sup>s</sup> 163	60·396 <sup>s</sup> 208	40·49 <sup>s</sup> 124
30·6	9·301 <sup>s</sup> 225	64·86 81	13·222 <sup>s</sup> 324	56·06 <sup>s</sup> 177	60·604 <sup>s</sup> 181	41·73 <sup>s</sup> 147
May 10·6	9·526 <sup>s</sup> 189	65·67 80	13·546 <sup>s</sup> 275	57·83 <sup>s</sup> 187	60·785 <sup>s</sup> 157	43·20 <sup>s</sup> 162
20·5	9·715 <sup>s</sup> 157	66·47 82	13·821 <sup>s</sup> 219	59·70 <sup>s</sup> 192	60·942 <sup>s</sup> 122	44·82 <sup>s</sup> 168
30·5	9·872 <sup>s</sup> 117	67·29 79	14·040 <sup>s</sup> 162	61·62 <sup>s</sup> 195	61·064 <sup>s</sup> 91	46·50 <sup>s</sup> 173
June 9·5	9·989 <sup>s</sup> 74	68·08 77	14·202 <sup>s</sup> 98	63·57 <sup>s</sup> 194	61·155 <sup>s</sup> 58	48·23 <sup>s</sup> 171
19·5	10·063 <sup>s</sup> 33	68·85 74	14·300 <sup>s</sup> 32	65·51 <sup>s</sup> 186	61·213 <sup>s</sup> 20	49·94 <sup>s</sup> 164
29·4	10·096 <sup>s</sup> 12	69·59 65	14·332 <sup>s</sup> 34	67·37 <sup>s</sup> 175	61·233 <sup>s</sup> 16	51·58 <sup>s</sup> 150
July 9·4	10·084 <sup>s</sup> 57	70·24 58	14·298 <sup>s</sup> 97	69·12 <sup>s</sup> 158	61·217 <sup>s</sup> 52	53·08 <sup>s</sup> 136
19·4	10·027 <sup>s</sup> 100	70·82 48	14·201 <sup>s</sup> 162	70·70 <sup>s</sup> 134	61·165 <sup>s</sup> 89	54·44 <sup>s</sup> 118
29·4	9·927 <sup>s</sup> 136	71·30 34	14·039 <sup>s</sup> 216	72·04 <sup>s</sup> 109	61·076 <sup>s</sup> 115	55·62 <sup>s</sup> 99
Aug. 8·3	9·791 <sup>s</sup> 169	71·64 19	13·823 <sup>s</sup> 261	73·13 <sup>s</sup> 76	60·961 <sup>s</sup> 147	56·61 <sup>s</sup> 75
18·3	9·622 <sup>s</sup> 194	71·83 2	13·562 <sup>s</sup> 301	73·89 <sup>s</sup> 42	60·814 <sup>s</sup> 165	57·36 <sup>s</sup> 52
28·3	9·428 <sup>s</sup> 208	71·85 15	13·261 <sup>s</sup> 322	74·31 <sup>s</sup> 4	60·649 <sup>s</sup> 180	57·88 <sup>s</sup> 27
Sept. 7·2	9·220 <sup>s</sup> 214	71·70 32	12·939 <sup>s</sup> 331	74·35 <sup>s</sup> 33	60·469 <sup>s</sup> 186	58·15 <sup>s</sup> 4
17·2	9·006 <sup>s</sup> 210	71·38 51	12·608 <sup>s</sup> 322	74·02 <sup>s</sup> 70	60·283 <sup>s</sup> 183	58·19 <sup>s</sup> 19
27·2	8·796 <sup>s</sup> 189	70·87 66	12·286 <sup>s</sup> 297	73·32 <sup>s</sup> 106	60·100 <sup>s</sup> 171	58·00 <sup>s</sup> 50
Oct. 7·2	8·607 <sup>s</sup> 161	70·21 77	11·989 <sup>s</sup> 256	72·26 <sup>s</sup> 138	59·929 <sup>s</sup> 151	57·50 <sup>s</sup> 75
17·1	8·446 <sup>s</sup> 120	69·44 86	11·733 <sup>s</sup> 199	70·88 <sup>s</sup> 165	59·778 <sup>s</sup> 117	56·75 <sup>s</sup> 102
27·1	8·326 <sup>s</sup> 72	68·58 86	11·534 <sup>s</sup> 132	69·23 <sup>s</sup> 183	59·661 <sup>s</sup> 78	55·73 <sup>s</sup> 126
Nov. 6·1	8·254 <sup>s</sup> 18	67·72 87	11·402 <sup>s</sup> 53	67·40 <sup>s</sup> 195	59·583 <sup>s</sup> 36	54·47 <sup>s</sup> 152
16·1	8·236 <sup>s</sup> 43	66·85 78	11·349 <sup>s</sup> 30	65·45 <sup>s</sup> 199	59·547 <sup>s</sup> 12	52·95 <sup>s</sup> 174
26·0	8·279 <sup>s</sup> 101	66·07 68	11·379 <sup>s</sup> 115	63·46 <sup>s</sup> 196	59·559 <sup>s</sup> 61	51·21 <sup>s</sup> 193
Dec. 6·0	8·380 <sup>s</sup> 159	65·39 54	11·494 <sup>s</sup> 198	61·50 <sup>s</sup> 183	59·620 <sup>s</sup> 110	49·28 <sup>s</sup> 205
16·0	8·539 <sup>s</sup> 211	64·85 37	11·692 <sup>s</sup> 273	59·67 <sup>s</sup> 163	59·730 <sup>s</sup> 153	47·23 <sup>s</sup> 215
25·9	8·750 <sup>s</sup> 256	64·48 18	11·965 <sup>s</sup> 340	58·04 <sup>s</sup> 140	59·883 <sup>s</sup> 196	45·08 <sup>s</sup> 216
35·9	9·006 <sup>s</sup>	64·30	12·305 <sup>s</sup>	56·64 <sup>s</sup>	60·079 <sup>s</sup>	42·92 <sup>s</sup>
Mean Place	6·430	71·27	9·230	67·44	58·507	42·82
Sec δ, Tan δ	1·208	—0·678	1·782	—1·475	1·014	+0·167
L α, L δ	+0·02	—0·1	+0·04	—0·1	0·00	—0·1
ω α, ω δ	—0·01	—0·9	—0·03	—1·0	0·00	—1·0
AUTHORITY	A. E.		A. E.		A. E.	

# 386 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	30 Ophiuchi. Mag. 5.0		ε Herculis. Mag. 3.9		η Ophiuchi. Mag. 2.6		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.	
	<sup>h</sup> 16 <sup>m</sup> 56	<sup>°</sup> 4 <sup>'</sup> 6	<sup>h</sup> 16 <sup>m</sup> 57	<sup>°</sup> 31 <sup>'</sup> 2	<sup>h</sup> 17 <sup>m</sup> 5	<sup>°</sup> 15 <sup>'</sup> 37	
Jan.	0.9 10.9 20.9 30.9	55.886 <sup>222</sup> 56.108 <sup>251</sup> 56.359 <sup>271</sup> 56.630 <sup>285</sup>	16.35 <sup>144</sup> 17.79 <sup>142</sup> 19.21 <sup>134</sup> 20.55 <sup>119</sup>	16.950 <sup>215</sup> 17.165 <sup>251</sup> 17.416 <sup>279</sup> 17.695 <sup>299</sup>	28.32 <sup>291</sup> 25.41 <sup>269</sup> 22.72 <sup>235</sup> 20.37 <sup>195</sup>	53.199 <sup>227</sup> 53.426 <sup>257</sup> 53.683 <sup>279</sup> 53.962 <sup>291</sup>	36.67 <sup>78</sup> 37.45 <sup>85</sup> 38.30 <sup>85</sup> 39.15 <sup>79</sup>
Feb.	9.8 19.8	56.915 <sup>291</sup> 57.206 <sup>293</sup>	21.74 <sup>101</sup> 22.75 <sup>78</sup>	17.994 <sup>312</sup> 18.306 <sup>317</sup>	18.42 <sup>146</sup> 16.96 <sup>94</sup>	54.253 <sup>302</sup> 54.555 <sup>305</sup>	39.94 <sup>73</sup> 40.67 <sup>62</sup>
Mar.	1.8 11.7 21.7 31.7	57.499 <sup>288</sup> 57.787 <sup>280</sup> 58.067 <sup>269</sup> 58.336 <sup>254</sup>	23.53 <sup>53</sup> 24.06 <sup>25</sup> 24.31 <sup>1</sup> 24.30 <sup>27</sup>	18.623 <sup>313</sup> 18.936 <sup>307</sup> 19.243 <sup>290</sup> 19.533 <sup>272</sup>	16.02 <sup>37</sup> 15.65 <sup>19</sup> 15.84 <sup>75</sup> 16.59 <sup>123</sup>	54.860 <sup>302</sup> 55.162 <sup>295</sup> 55.457 <sup>285</sup> 55.742 <sup>272</sup>	41.29 <sup>48</sup> 41.77 <sup>35</sup> 42.12 <sup>20</sup> 42.32 <sup>6</sup>
Apr.	10.7 20.6 30.6	58.590 <sup>236</sup> 58.826 <sup>217</sup> 59.043 <sup>192</sup>	24.03 <sup>48</sup> 23.55 <sup>67</sup> 22.88 <sup>82</sup>	19.805 <sup>248</sup> 20.053 <sup>221</sup> 20.274 <sup>187</sup>	17.82 <sup>167</sup> 19.49 <sup>204</sup> 21.53 <sup>234</sup>	56.014 <sup>254</sup> 56.268 <sup>235</sup> 56.503 <sup>211</sup>	42.38 <sup>7</sup> 42.31 <sup>22</sup> 42.09 <sup>26</sup>
May	10.6 20.6 30.5	59.235 <sup>166</sup> 59.401 <sup>137</sup> 59.538 <sup>105</sup>	22.06 <sup>92</sup> 21.14 <sup>99</sup> 20.15 <sup>100</sup>	20.461 <sup>155</sup> 20.616 <sup>118</sup> 20.734 <sup>78</sup>	23.87 <sup>252</sup> 26.39 <sup>265</sup> 29.04 <sup>267</sup>	56.714 <sup>185</sup> 56.899 <sup>156</sup> 57.055 <sup>122</sup>	41.83 <sup>32</sup> 41.51 <sup>36</sup> 41.15 <sup>36</sup>
June	9.5 19.5 29.4	59.643 <sup>70</sup> 59.713 <sup>35</sup> 59.748 <sup>3</sup>	19.15 <sup>100</sup> 18.15 <sup>95</sup> 17.20 <sup>88</sup>	20.812 <sup>38</sup> 20.850 <sup>3</sup> 20.847 <sup>47</sup>	31.71 <sup>263</sup> 34.34 <sup>250</sup> 36.84 <sup>231</sup>	57.177 <sup>85</sup> 57.262 <sup>47</sup> 57.309 <sup>9</sup>	40.79 <sup>36</sup> 40.43 <sup>34</sup> 40.09 <sup>33</sup>
July	9.4 19.4 29.4	59.745 <sup>39</sup> 59.706 <sup>75</sup> 59.631 <sup>106</sup>	16.32 <sup>80</sup> 15.52 <sup>70</sup> 14.82 <sup>60</sup>	20.800 <sup>85</sup> 20.715 <sup>122</sup> 20.593 <sup>157</sup>	39.15 <sup>206</sup> 41.21 <sup>178</sup> 42.99 <sup>143</sup>	57.318 <sup>27</sup> 57.291 <sup>69</sup> 57.222 <sup>103</sup>	39.76 <sup>28</sup> 39.48 <sup>25</sup> 39.23 <sup>23</sup>
Aug.	8.3 18.3 28.3	59.525 <sup>136</sup> 59.389 <sup>158</sup> 59.231 <sup>173</sup>	14.22 <sup>48</sup> 13.74 <sup>38</sup> 13.36 <sup>25</sup>	20.436 <sup>186</sup> 20.250 <sup>209</sup> 20.041 <sup>224</sup>	44.42 <sup>109</sup> 45.51 <sup>70</sup> 46.21 <sup>31</sup>	57.119 <sup>135</sup> 56.984 <sup>157</sup> 56.827 <sup>177</sup>	39.00 <sup>21</sup> 38.79 <sup>19</sup> 38.60 <sup>19</sup>
Sept.	7.3 17.2 27.2	59.058 <sup>179</sup> 58.879 <sup>177</sup> 58.702 <sup>164</sup>	13.11 <sup>12</sup> 12.99 <sup>0</sup> 12.99 <sup>14</sup>	19.817 <sup>230</sup> 19.587 <sup>227</sup> 19.360 <sup>213</sup>	46.52 <sup>11</sup> 46.41 <sup>53</sup> 45.88 <sup>93</sup>	56.650 <sup>181</sup> 56.469 <sup>184</sup> 56.285 <sup>170</sup>	38.41 <sup>17</sup> 38.24 <sup>15</sup> 38.09 <sup>14</sup>
Oct.	7.2 17.1 27.1	58.538 <sup>142</sup> 58.396 <sup>111</sup> 58.285 <sup>72</sup>	13.13 <sup>29</sup> 13.42 <sup>46</sup> 13.88 <sup>63</sup>	19.147 <sup>191</sup> 18.956 <sup>157</sup> 18.799 <sup>118</sup>	44.95 <sup>133</sup> 43.62 <sup>172</sup> 41.90 <sup>211</sup>	56.115 <sup>147</sup> 55.968 <sup>117</sup> 55.851 <sup>79</sup>	37.95 <sup>8</sup> 37.87 <sup>2</sup> 37.85 <sup>7</sup>
Nov.	6.1 16.1 26.0	58.213 <sup>28</sup> 58.185 <sup>21</sup> 58.206 <sup>69</sup>	14.51 <sup>80</sup> 15.31 <sup>98</sup> 16.29 <sup>114</sup>	18.681 <sup>70</sup> 18.611 <sup>18</sup> 18.593 <sup>36</sup>	39.79 <sup>242</sup> 37.37 <sup>269</sup> 34.68 <sup>291</sup>	55.772 <sup>31</sup> 55.741 <sup>16</sup> 55.757 <sup>71</sup>	37.92 <sup>17</sup> 38.09 <sup>29</sup> 38.38 <sup>42</sup>
Dec.	6.0 16.0 26.0 35.9	58.275 <sup>118</sup> 58.393 <sup>162</sup> 58.555 <sup>201</sup> 58.756	17.43 <sup>129</sup> 18.72 <sup>139</sup> 20.11 <sup>146</sup> 21.57	18.629 <sup>89</sup> 18.718 <sup>141</sup> 18.859 <sup>189</sup> 19.048	31.77 <sup>302</sup> 28.75 <sup>307</sup> 25.68 <sup>303</sup> 22.65	55.828 <sup>115</sup> 55.943 <sup>164</sup> 56.107 <sup>207</sup> 56.314	38.80 <sup>54</sup> 39.34 <sup>65</sup> 39.99 <sup>78</sup> 40.77
Mean Place	56.815	24.23	18.279	25.31	54.139	46.28	
Sec δ, Tan δ	1.003	-0.072	1.167	+0.602	1.038	-0.280	
L α, L δ	0.00	-0.1	-0.02	-0.1	+0.01	-0.1	
ω α, ω δ	0.00	-1.0	+0.01	-1.0	0.00	-1.0	
AUTHORITY			A. E.		A. E.		



# APPARENT PLACES OF STARS, 1922. 387

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ζ Draconis. Mag. 3.2		α Herculis. Mag. 3.1-3.9		δ Herculis. Mag. 3.2	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> <sup>m</sup> 17 8	<sup>°</sup> <sup>'</sup> 65 48	<sup>h</sup> <sup>m</sup> 17 11	<sup>°</sup> <sup>'</sup> 14 28	<sup>h</sup> <sup>m</sup> 17 11	<sup>°</sup> <sup>'</sup> 24 55
Jan. 0.9	30.12 28	39.29 345	4.315 201	46.98 230	48.382 199	53.36 272
10.9	30.40 36	35.84 316	4.516 230	44.68 218	48.581 234	50.64 255
20.9	30.76 44	32.68 274	4.746 256	42.50 195	48.815 261	48.09 228
30.9	31.20 51	29.94 221	5.002 276	40.55 167	49.076 282	45.81 190
Feb. 9.8	31.71 54	27.73 162	5.278 288	38.88 132	49.358 293	43.91 149
19.8	32.25 58	26.11 97	5.566 290	37.56 92	49.651 302	42.42 101
Mar. 1.8	32.83 58	25.14 30	5.856 289	36.64 49	49.953 302	41.41 48
11.7	33.41 57	24.84 38	6.145 284	36.15 4	50.255 296	40.93 4
21.7	33.98 55	25.22 105	6.429 274	36.11 39	50.551 285	40.97 56
31.7	34.53 50	26.27 164	6.703 260	36.50 81	50.836 270	41.53 102
Apr. 10.7	35.03 45	27.91 217	6.963 241	37.31 114	51.106 250	42.55 145
20.6	35.48 38	30.08 260	7.204 222	38.45 145	51.356 226	44.00 181
30.6	35.86 30	32.68 295	7.426 195	39.90 169	51.582 199	45.81 210
May 10.6	36.16 22	35.63 320	7.621 169	41.59 187	51.781 169	47.91 230
20.6	36.38 14	38.83 333	7.790 139	43.46 198	51.950 136	50.21 242
30.5	36.52 5	42.16 336	7.929 103	45.44 201	52.086 97	52.63 247
June 9.5	36.57 5	45.52 329	8.032 67	47.45 198	52.183 59	55.10 244
19.5	36.52 13	48.81 315	8.099 34	49.43 193	52.242 20	57.54 235
29.4	36.39 21	51.96 289	8.133 8	51.36 179	52.262 20	59.89 219
July 9.4	36.18 30	54.85 260	8.125 45	53.15 162	52.242 62	62.08 198
19.4	35.88 36	57.45 221	8.080 83	54.77 139	52.180 98	64.06 172
29.4	35.52 43	59.66 179	7.997 116	56.16 121	52.082 134	65.78 143
Aug. 8.3	35.09 48	61.45 134	7.881 144	57.37 92	51.948 163	67.21 111
18.3	34.61 52	62.79 83	7.737 165	58.29 66	51.785 189	68.32 78
28.3	34.09 55	63.62 34	7.572 186	58.95 37	51.596 205	69.10 41
Sept. 7.3	33.54 55	63.96 18	7.386 194	59.32 6	51.391 213	69.51 3
17.2	32.99 56	63.78 73	7.192 192	59.38 17	51.178 214	69.54 31
27.2	32.43 53	63.05 123	7.000 181	59.21 53	50.964 203	69.23 72
Oct. 7.2	31.90 49	61.82 174	6.819 166	58.68 83	50.761 183	68.51 108
17.1	31.41 44	60.08 222	6.653 135	57.85 112	50.578 154	67.43 145
27.1	30.97 37	57.86 264	6.518 96	56.73 140	50.424 116	65.98 180
Nov. 6.1	30.60 29	55.22 304	6.422 57	55.33 170	50.308 71	64.18 213
16.1	30.31 20	52.18 336	6.365 8	53.63 194	50.237 22	62.05 239
26.0	30.11 10	48.82 356	6.357 42	51.69 212	50.215 27	59.66 259
Dec. 6.0	30.01 1	45.26 370	6.399 89	49.57 226	50.242 80	57.07 277
16.0	30.02 12	41.56 370	6.488 135	47.31 236	50.322 129	54.30 282
26.0	30.14 22	37.86 361	6.623 175	44.95 235	50.451 172	51.48 281
35.9	30.36	34.25	6.798	42.60	50.623	48.67
Mean Place	33.49	38.05	5.403	41.34	49.612	48.86
Sec δ, Tan δ	2.440	+2.226	1.033	+0.258	1.103	+0.465
L α, L δ.	-0.06	-0.1	-0.01	-0.1	-0.01	-0.1
ω α, ω δ	+0.03	-1.0	0.00	-1.0	+0.01	-1.0
AUTHORITY	A. E.		A. E.		A. E.	

# 388 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\pi$ Herculis. Mag. 3.4		$\theta$ Ophiuchi. Mag. 3.4		$\beta$ Aræ. Mag. 2.8	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 17 <sup>m</sup> 12 <sup>s</sup>	<sup>°</sup> 36 <sup>'</sup> 53 <sup>"</sup>	<sup>h</sup> 17 <sup>m</sup> 17 <sup>s</sup>	<sup>°</sup> 24 <sup>'</sup> 55 <sup>"</sup>	<sup>h</sup> 17 <sup>m</sup> 18 <sup>s</sup>	<sup>°</sup> 55 <sup>'</sup> 27 <sup>"</sup>
Jan. 0.9	18.267 <sup>204</sup>	49.75 <sup>310</sup>	12.019 <sup>232</sup>	12.30 <sup>19</sup>	47.102 <sup>339</sup>	14.00 <sup>147</sup>
10.9	18.471 <sup>241</sup>	46.65 <sup>285</sup>	12.251 <sup>264</sup>	12.49 <sup>31</sup>	47.441 <sup>392</sup>	12.53 <sup>123</sup>
20.9	18.712 <sup>278</sup>	43.80 <sup>254</sup>	12.515 <sup>287</sup>	12.80 <sup>37</sup>	47.833 <sup>433</sup>	11.30 <sup>93</sup>
30.9	18.990 <sup>303</sup>	41.26 <sup>213</sup>	12.802 <sup>307</sup>	13.17 <sup>43</sup>	48.266 <sup>467</sup>	10.37 <sup>66</sup>
Feb. 9.8	19.293 <sup>321</sup>	39.13 <sup>161</sup>	13.109 <sup>318</sup>	13.60 <sup>46</sup>	48.733 <sup>485</sup>	9.71 <sup>37</sup>
19.8	19.614 <sup>330</sup>	37.52 <sup>104</sup>	13.427 <sup>321</sup>	14.06 <sup>41</sup>	49.218 <sup>494</sup>	9.34 <sup>8</sup>
Mar. 1.8	19.944 <sup>331</sup>	36.48 <sup>45</sup>	13.748 <sup>320</sup>	14.47 <sup>39</sup>	49.712 <sup>498</sup>	9.26 <sup>19</sup>
11.7	20.275 <sup>325</sup>	36.03 <sup>13</sup>	14.068 <sup>316</sup>	14.86 <sup>33</sup>	50.210 <sup>491</sup>	9.45 <sup>45</sup>
21.7	20.600 <sup>312</sup>	36.16 <sup>73</sup>	14.384 <sup>307</sup>	15.19 <sup>29</sup>	50.701 <sup>476</sup>	9.90 <sup>71</sup>
31.7	20.912 <sup>294</sup>	36.89 <sup>126</sup>	14.691 <sup>293</sup>	15.48 <sup>23</sup>	51.177 <sup>458</sup>	10.61 <sup>93</sup>
Apr. 10.7	21.206 <sup>269</sup>	38.15 <sup>174</sup>	14.984 <sup>280</sup>	15.71 <sup>20</sup>	51.635 <sup>429</sup>	11.54 <sup>115</sup>
20.6	21.475 <sup>242</sup>	39.89 <sup>216</sup>	15.264 <sup>259</sup>	15.91 <sup>15</sup>	52.064 <sup>398</sup>	12.69 <sup>135</sup>
30.6	21.717 <sup>209</sup>	42.05 <sup>248</sup>	15.523 <sup>235</sup>	16.06 <sup>15</sup>	52.462 <sup>359</sup>	14.04 <sup>151</sup>
May 10.6	21.926 <sup>172</sup>	44.53 <sup>268</sup>	15.758 <sup>206</sup>	16.21 <sup>14</sup>	52.821 <sup>312</sup>	15.55 <sup>164</sup>
20.6	22.098 <sup>133</sup>	47.21 <sup>285</sup>	15.964 <sup>179</sup>	16.35 <sup>13</sup>	53.133 <sup>260</sup>	17.19 <sup>177</sup>
30.5	22.231 <sup>89</sup>	50.06 <sup>292</sup>	16.143 <sup>139</sup>	16.48 <sup>15</sup>	53.393 <sup>202</sup>	18.96 <sup>184</sup>
June 9.5	22.320 <sup>45</sup>	52.98 <sup>286</sup>	16.282 <sup>104</sup>	16.63 <sup>17</sup>	53.595 <sup>143</sup>	20.80 <sup>187</sup>
19.5	22.365 <sup>2</sup>	55.84 <sup>275</sup>	16.386 <sup>62</sup>	16.80 <sup>16</sup>	53.738 <sup>75</sup>	22.67 <sup>186</sup>
29.4	22.367 <sup>47</sup>	58.59 <sup>256</sup>	16.448 <sup>22</sup>	16.96 <sup>19</sup>	53.813 <sup>9</sup>	24.53 <sup>179</sup>
July 9.4	22.320 <sup>89</sup>	61.15 <sup>230</sup>	16.470 <sup>19</sup>	17.15 <sup>18</sup>	53.822 <sup>61</sup>	26.32 <sup>167</sup>
19.4	22.231 <sup>131</sup>	63.45 <sup>200</sup>	16.451 <sup>65</sup>	17.33 <sup>19</sup>	53.761 <sup>126</sup>	27.99 <sup>151</sup>
29.4	22.100 <sup>168</sup>	65.45 <sup>169</sup>	16.386 <sup>101</sup>	17.52 <sup>13</sup>	53.635 <sup>183</sup>	29.50 <sup>128</sup>
Aug. 8.3	21.932 <sup>199</sup>	67.14 <sup>128</sup>	16.285 <sup>138</sup>	17.65 <sup>10</sup>	53.452 <sup>239</sup>	30.78 <sup>100</sup>
18.3	21.733 <sup>228</sup>	68.42 <sup>87</sup>	16.147 <sup>164</sup>	17.75 <sup>2</sup>	53.213 <sup>282</sup>	31.78 <sup>67</sup>
28.3	21.505 <sup>246</sup>	69.29 <sup>45</sup>	15.983 <sup>184</sup>	17.77 <sup>5</sup>	52.931 <sup>312</sup>	32.45 <sup>34</sup>
Sept. 7.3	21.259 <sup>254</sup>	69.74 <sup>1</sup>	15.799 <sup>195</sup>	17.72 <sup>13</sup>	52.619 <sup>328</sup>	32.79 <sup>3</sup>
17.2	21.005 <sup>253</sup>	69.73 <sup>44</sup>	15.604 <sup>195</sup>	17.59 <sup>21</sup>	52.291 <sup>327</sup>	32.76 <sup>43</sup>
27.2	20.752 <sup>240</sup>	69.29 <sup>88</sup>	15.409 <sup>184</sup>	17.38 <sup>26</sup>	51.964 <sup>311</sup>	32.33 <sup>79</sup>
Oct. 7.2	20.512 <sup>219</sup>	68.41 <sup>134</sup>	15.225 <sup>164</sup>	17.12 <sup>35</sup>	51.653 <sup>278</sup>	31.54 <sup>111</sup>
17.1	20.293 <sup>188</sup>	67.07 <sup>175</sup>	15.061 <sup>131</sup>	16.77 <sup>33</sup>	51.375 <sup>228</sup>	30.43 <sup>142</sup>
27.1	20.105 <sup>148</sup>	65.32 <sup>216</sup>	14.930 <sup>88</sup>	16.44 <sup>36</sup>	51.147 <sup>166</sup>	29.01 <sup>165</sup>
Nov. 6.1	19.957 <sup>101</sup>	63.16 <sup>252</sup>	14.842 <sup>46</sup>	16.08 <sup>32</sup>	50.981 <sup>92</sup>	27.36 <sup>183</sup>
16.1	19.856 <sup>48</sup>	60.64 <sup>283</sup>	14.796 <sup>7</sup>	15.76 <sup>26</sup>	50.889 <sup>15</sup>	25.53 <sup>193</sup>
26.0	19.808 <sup>8</sup>	57.81 <sup>302</sup>	14.803 <sup>64</sup>	15.50 <sup>19</sup>	50.874 <sup>70</sup>	23.60 <sup>194</sup>
Dec. 6.0	19.816 <sup>68</sup>	54.79 <sup>321</sup>	14.867 <sup>114</sup>	15.31 <sup>7</sup>	50.944 <sup>150</sup>	21.66 <sup>190</sup>
16.0	19.884 <sup>121</sup>	51.58 <sup>325</sup>	14.981 <sup>165</sup>	15.24 <sup>6</sup>	51.094 <sup>229</sup>	19.76 <sup>176</sup>
26.0	20.005 <sup>171</sup>	48.33 <sup>320</sup>	15.146 <sup>205</sup>	15.30 <sup>16</sup>	51.323 <sup>299</sup>	18.00 <sup>159</sup>
35.9	20.176	45.13	15.351	15.46	51.622	16.41
Mean Place	19.758	46.41	13.031	22.98	48.734	27.93
Sec $\delta$ , Tan $\delta$	1.250	+0.751	1.103	-0.465	1.764	-1.453
L $\alpha$ , L $\delta$	-0.02	-0.1	+0.01	-0.1	+0.04	-0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.01	-1.0	-0.01	-1.0	-0.02	-1.0
AUTHORITY	A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 389

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\sigma$ Ophiuchi. Mag. 4.4		$\nu$ Scorpii. Mag. 2.8		$\alpha$ Aræ. Mag. 3.0		
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.	
	<sup>h</sup> 17 <sup>m</sup> 22	<sup>°</sup> 4 <sup>'</sup> 12	<sup>h</sup> 17 <sup>m</sup> 25	<sup>°</sup> 37 <sup>'</sup> 13	<sup>h</sup> 17 <sup>m</sup> 25	<sup>°</sup> 49 <sup>'</sup> 48	
Jan.	0.9 10.9 20.9 30.9	37.608 <sup>195</sup> 37.803 <sup>226</sup> 38.029 <sup>250</sup> 38.279 <sup>268</sup>	32.83 <sup>179</sup> 31.04 <sup>173</sup> 29.31 <sup>160</sup> 27.71 <sup>139</sup>	26.218 <sup>251</sup> 26.469 <sup>289</sup> 26.758 <sup>319</sup> 27.077 <sup>340</sup>	54.30 <sup>54</sup> 53.76 <sup>39</sup> 53.37 <sup>24</sup> 53.13 <sup>10</sup>	47.076 <sup>296</sup> 47.372 <sup>345</sup> 47.717 <sup>382</sup> 48.099 <sup>410</sup>	44.56 <sup>125</sup> 43.31 <sup>101</sup> 42.30 <sup>79</sup> 41.51 <sup>56</sup>
Feb.	9.8 19.8	38.547 <sup>279</sup> 38.826 <sup>285</sup>	26.32 <sup>113</sup> 25.19 <sup>82</sup>	27.417 <sup>354</sup> 27.771 <sup>361</sup>	53.03 <sup>3</sup> 53.06 <sup>14</sup>	48.509 <sup>428</sup> 48.937 <sup>438</sup>	40.95 <sup>31</sup> 40.64 <sup>8</sup>
Mar.	1.8 11.8	39.111 <sup>285</sup> 39.396 <sup>281</sup>	24.37 <sup>49</sup> 23.88 <sup>14</sup>	28.132 <sup>362</sup> 28.494 <sup>358</sup>	53.20 <sup>24</sup> 53.44 <sup>33</sup>	49.375 <sup>441</sup> 49.816 <sup>436</sup>	40.56 <sup>13</sup> 40.69 <sup>35</sup>
	21.7 31.7	39.677 <sup>274</sup> 39.951 <sup>263</sup>	23.74 <sup>20</sup> 23.94 <sup>53</sup>	28.852 <sup>350</sup> 29.202 <sup>336</sup>	53.77 <sup>39</sup> 54.16 <sup>47</sup>	50.252 <sup>427</sup> 50.679 <sup>410</sup>	41.04 <sup>55</sup> 41.59 <sup>73</sup>
Apr.	10.7 20.6	40.214 <sup>248</sup> 40.462 <sup>229</sup>	24.47 <sup>83</sup> 25.30 <sup>107</sup>	29.538 <sup>320</sup> 29.858 <sup>298</sup>	54.63 <sup>53</sup> 55.16 <sup>60</sup>	51.089 <sup>387</sup> 51.476 <sup>363</sup>	42.32 <sup>92</sup> 43.24 <sup>108</sup>
May	30.6 10.6 20.6 30.5	40.691 <sup>208</sup> 40.899 <sup>183</sup> 41.082 <sup>154</sup> 41.236 <sup>122</sup>	26.37 <sup>127</sup> 27.64 <sup>141</sup> 29.05 <sup>150</sup> 30.55 <sup>153</sup>	30.156 <sup>273</sup> 30.429 <sup>242</sup> 30.671 <sup>208</sup> 30.879 <sup>168</sup>	55.76 <sup>66</sup> 56.42 <sup>73</sup> 57.15 <sup>78</sup> 57.93 <sup>83</sup>	51.839 <sup>326</sup> 52.165 <sup>290</sup> 52.455 <sup>246</sup> 52.701 <sup>195</sup>	44.32 <sup>122</sup> 45.54 <sup>134</sup> 46.88 <sup>145</sup> 48.33 <sup>152</sup>
June	9.5 19.5 29.5	41.358 <sup>87</sup> 41.445 <sup>52</sup> 41.497 <sup>12</sup>	32.08 <sup>152</sup> 33.60 <sup>145</sup> 35.05 <sup>136</sup>	31.047 <sup>125</sup> 31.172 <sup>78</sup> 31.250 <sup>29</sup>	58.76 <sup>87</sup> 59.63 <sup>88</sup> 60.51 <sup>87</sup>	52.896 <sup>143</sup> 53.039 <sup>83</sup> 53.122 <sup>25</sup>	49.85 <sup>156</sup> 51.41 <sup>157</sup> 52.98 <sup>153</sup>
July	9.4 19.4 29.4	41.509 <sup>25</sup> 41.484 <sup>63</sup> 41.421 <sup>98</sup>	36.41 <sup>124</sup> 37.65 <sup>108</sup> 38.73 <sup>91</sup>	31.279 <sup>20</sup> 31.259 <sup>67</sup> 31.192 <sup>114</sup>	61.38 <sup>82</sup> 62.20 <sup>76</sup> 62.96 <sup>64</sup>	53.147 <sup>37</sup> 53.110 <sup>95</sup> 53.015 <sup>150</sup>	54.51 <sup>143</sup> 55.94 <sup>132</sup> 57.26 <sup>113</sup>
Aug.	8.3 18.3	41.323 <sup>128</sup> 41.195 <sup>155</sup>	39.64 <sup>74</sup> 40.38 <sup>54</sup>	31.078 <sup>154</sup> 30.924 <sup>187</sup>	63.60 <sup>52</sup> 64.12 <sup>34</sup>	52.865 <sup>198</sup> 52.667 <sup>240</sup>	58.39 <sup>90</sup> 59.29 <sup>62</sup>
	28.3 7.3 17.2 27.2	41.040 <sup>173</sup> 40.867 <sup>183</sup> 40.684 <sup>185</sup> 40.499 <sup>177</sup>	40.92 <sup>35</sup> 41.27 <sup>14</sup> 41.41 <sup>7</sup> 41.34 <sup>28</sup>	30.737 <sup>211</sup> 30.526 <sup>224</sup> 30.302 <sup>227</sup> 30.075 <sup>216</sup>	64.46 <sup>16</sup> 64.62 <sup>4</sup> 64.58 <sup>24</sup> 64.34 <sup>45</sup>	52.427 <sup>266</sup> 52.161 <sup>284</sup> 51.877 <sup>285</sup> 51.592 <sup>272</sup>	59.91 <sup>34</sup> 60.25 <sup>1</sup> 60.26 <sup>31</sup> 59.95 <sup>64</sup>
Sept.	7.2 17.2 27.1	40.322 <sup>157</sup> 40.165 <sup>132</sup> 40.033 <sup>96</sup>	41.06 <sup>51</sup> 40.55 <sup>72</sup> 39.83 <sup>94</sup>	29.859 <sup>193</sup> 29.666 <sup>158</sup> 29.508 <sup>114</sup>	63.89 <sup>62</sup> 63.27 <sup>77</sup> 62.50 <sup>89</sup>	51.320 <sup>245</sup> 51.075 <sup>202</sup> 50.873 <sup>149</sup>	59.31 <sup>92</sup> 58.39 <sup>118</sup> 57.21 <sup>140</sup>
Oct.	6.1 16.1 26.0	39.937 <sup>55</sup> 39.882 <sup>8</sup> 39.874 <sup>38</sup>	38.89 <sup>117</sup> 37.72 <sup>136</sup> 36.36 <sup>155</sup>	29.394 <sup>61</sup> 29.333 <sup>2</sup> 29.331 <sup>57</sup>	61.61 <sup>94</sup> 60.67 <sup>97</sup> 59.70 <sup>93</sup>	50.724 <sup>84</sup> 50.640 <sup>15</sup> 50.625 <sup>57</sup>	55.81 <sup>156</sup> 54.25 <sup>162</sup> 52.63 <sup>165</sup>
Nov.	6.0 16.0	39.912 <sup>87</sup> 39.999 <sup>129</sup>	34.81 <sup>169</sup> 33.12 <sup>179</sup>	29.388 <sup>117</sup> 29.505 <sup>173</sup>	58.77 <sup>85</sup> 57.92 <sup>75</sup>	50.682 <sup>129</sup> 50.811 <sup>200</sup>	50.98 <sup>160</sup> 49.38 <sup>148</sup>
Dec.	26.0 35.9	40.128 <sup>174</sup> 40.302	31.33 <sup>183</sup> 29.50	29.678 <sup>223</sup> 29.901	57.17 <sup>61</sup> 56.56	51.011 <sup>262</sup> 51.273	47.90 <sup>132</sup> 46.58
Mean Place	38.632	25.62	27.389	66.15	48.541	57.61	
Sec $\delta$ , Tan $\delta$	1.003	+0.074	1.256	-0.760	1.550	-1.184	
L $\alpha$ , L $\delta$	0.00	-0.1	+0.02	-0.1	+0.03	-0.1	
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	-1.0	-0.01	-1.0	-0.01	-1.0	
AUTHORITY			A. N.		A. E.		

# 390 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\lambda$ Scorpii. Mag. 1·7		$\beta$ Draconis. Mag. 3·0		$\alpha$ Ophiuchi. Mag. 2·1		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.	
	h m 17 28	° ' " 37 2	h m 17 28	° ' " 52 21	h m 17 31	° ' " 12 36	
Jan.	0·9 10·9 20·9 30·9	17·406 <sup>247</sup> 17·653 <sup>285</sup> 17·938 <sup>315</sup> 18·253 <sup>339</sup>	41·92 <sup>56</sup> 41·36 <sup>40</sup> 40·96 <sup>26</sup> 40·70 <sup>11</sup>	38·049 <sup>197</sup> 38·246 <sup>256</sup> 38·502 <sup>308</sup> 38·810 <sup>349</sup>	34·35 <sup>343</sup> 30·92 <sup>322</sup> 27·70 <sup>282</sup> 24·88 <sup>239</sup>	17·678 <sup>184</sup> 17·862 <sup>215</sup> 18·077 <sup>244</sup> 18·321 <sup>262</sup>	62·94 <sup>219</sup> 60·75 <sup>210</sup> 58·65 <sup>190</sup> 56·75 <sup>166</sup>
Feb.	9·8 19·8	18·592 <sup>353</sup> 18·945 <sup>359</sup>	40·59 <sup>0</sup> 40·59 <sup>11</sup>	39·159 <sup>379</sup> 39·538 <sup>398</sup>	22·49 <sup>184</sup> 20·65 <sup>123</sup>	18·583 <sup>278</sup> 18·861 <sup>285</sup>	55·09 <sup>132</sup> 53·77 <sup>94</sup>
Mar.	1·8 11·8 21·7 31·7	19·304 <sup>362</sup> 19·666 <sup>358</sup> 20·024 <sup>350</sup> 20·374 <sup>337</sup>	40·70 <sup>21</sup> 40·91 <sup>29</sup> 41·20 <sup>37</sup> 41·57 <sup>42</sup>	39·936 <sup>410</sup> 40·346 <sup>407</sup> 40·753 <sup>396</sup> 41·149 <sup>372</sup>	19·42 <sup>57</sup> 18·85 <sup>7</sup> 18·92 <sup>74</sup> 19·66 <sup>134</sup>	19·146 <sup>287</sup> 19·433 <sup>285</sup> 19·718 <sup>279</sup> 19·997 <sup>267</sup>	52·83 <sup>52</sup> 52·31 <sup>13</sup> 52·18 <sup>32</sup> 52·50 <sup>72</sup>
Apr.	10·7 20·7 30·6 10·6	20·711 <sup>321</sup> 21·032 <sup>301</sup> 21·333 <sup>275</sup> 21·608 <sup>245</sup>	41·99 <sup>50</sup> 42·49 <sup>58</sup> 43·07 <sup>64</sup> 43·71 <sup>70</sup>	41·521 <sup>342</sup> 41·863 <sup>308</sup> 42·171 <sup>260</sup> 42·431 <sup>211</sup>	21·00 <sup>187</sup> 22·87 <sup>234</sup> 25·21 <sup>272</sup> 27·93 <sup>299</sup>	20·264 <sup>252</sup> 20·516 <sup>234</sup> 20·750 <sup>214</sup> 20·964 <sup>185</sup>	53·22 <sup>105</sup> 54·27 <sup>136</sup> 55·63 <sup>161</sup> 57·24 <sup>180</sup>
May	20·6 30·5 June 9·5 19·5	21·853 <sup>209</sup> 22·062 <sup>171</sup> 22·233 <sup>128</sup> 22·361 <sup>79</sup>	44·41 <sup>77</sup> 45·18 <sup>80</sup> 45·98 <sup>85</sup> 46·83 <sup>86</sup>	42·642 <sup>158</sup> 42·800 <sup>99</sup> 42·899 <sup>39</sup> 42·938 <sup>20</sup>	30·92 <sup>320</sup> 34·12 <sup>328</sup> 37·40 <sup>325</sup> 40·65 <sup>315</sup>	21·149 <sup>160</sup> 21·309 <sup>124</sup> 21·433 <sup>88</sup> 21·521 <sup>51</sup>	59·04 <sup>191</sup> 60·95 <sup>197</sup> 62·92 <sup>195</sup> 64·87 <sup>190</sup>
July	29·5 9·4 19·4 29·4	22·440 <sup>33</sup> 22·473 <sup>15</sup> 22·458 <sup>66</sup> 22·392 <sup>111</sup>	47·69 <sup>86</sup> 48·55 <sup>81</sup> 49·36 <sup>76</sup> 50·12 <sup>65</sup>	42·918 <sup>79</sup> 42·839 <sup>137</sup> 42·702 <sup>192</sup> 42·510 <sup>239</sup>	43·80 <sup>298</sup> 46·78 <sup>271</sup> 49·49 <sup>238</sup> 51·87 <sup>200</sup>	21·572 <sup>12</sup> 21·584 <sup>25</sup> 21·559 <sup>67</sup> 21·492 <sup>101</sup>	66·77 <sup>177</sup> 68·54 <sup>162</sup> 70·16 <sup>144</sup> 71·60 <sup>123</sup>
Aug.	8·4 18·3 28·3 7·3	22·281 <sup>151</sup> 22·130 <sup>185</sup> 21·945 <sup>209</sup> 21·736 <sup>225</sup>	50·77 <sup>52</sup> 51·29 <sup>36</sup> 51·65 <sup>18</sup> 51·83 <sup>3</sup>	42·271 <sup>282</sup> 41·989 <sup>313</sup> 41·676 <sup>344</sup> 41·332 <sup>354</sup>	53·87 <sup>159</sup> 55·46 <sup>114</sup> 56·60 <sup>62</sup> 57·22 <sup>15</sup>	21·391 <sup>134</sup> 21·257 <sup>157</sup> 21·100 <sup>180</sup> 20·920 <sup>191</sup>	72·83 <sup>97</sup> 73·80 <sup>71</sup> 74·51 <sup>45</sup> 74·96 <sup>21</sup>
Sept.	17·2 27·2 Oct. 7·2 17·2	21·511 <sup>225</sup> 21·286 <sup>216</sup> 21·070 <sup>193</sup> 20·877 <sup>160</sup>	51·80 <sup>22</sup> 51·58 <sup>42</sup> 51·16 <sup>59</sup> 50·57 <sup>76</sup>	40·978 <sup>357</sup> 40·621 <sup>345</sup> 40·276 <sup>324</sup> 39·952 <sup>289</sup>	57·37 <sup>35</sup> 57·02 <sup>88</sup> 56·14 <sup>138</sup> 54·76 <sup>183</sup>	20·729 <sup>193</sup> 20·536 <sup>186</sup> 20·350 <sup>170</sup> 20·180 <sup>146</sup>	75·17 <sup>11</sup> 75·06 <sup>40</sup> 74·66 <sup>70</sup> 73·96 <sup>98</sup>
Nov.	27·1 6·1 16·1 26·1	20·717 <sup>116</sup> 20·601 <sup>61</sup> 20·540 <sup>9</sup> 20·531 <sup>55</sup>	49·81 <sup>86</sup> 48·95 <sup>92</sup> 48·03 <sup>96</sup> 47·07 <sup>91</sup>	39·663 <sup>243</sup> 39·420 <sup>189</sup> 39·231 <sup>127</sup> 39·104 <sup>55</sup>	52·93 <sup>232</sup> 50·61 <sup>273</sup> 47·88 <sup>307</sup> 44·81 <sup>334</sup>	20·034 <sup>110</sup> 19·924 <sup>68</sup> 19·856 <sup>27</sup> 19·829 <sup>24</sup>	72·98 <sup>125</sup> 71·73 <sup>153</sup> 70·20 <sup>177</sup> 68·43 <sup>197</sup>
Dec.	6·0 16·0 26·0 35·9	20·586 <sup>112</sup> 20·698 <sup>169</sup> 20·867 <sup>220</sup> 21·087	46·16 <sup>85</sup> 45·31 <sup>74</sup> 44·57 <sup>61</sup> 43·96	39·049 <sup>15</sup> 39·064 <sup>86</sup> 39·150 <sup>158</sup> 39·308	41·47 <sup>351</sup> 37·96 <sup>357</sup> 34·39 <sup>355</sup> 30·84	19·853 <sup>72</sup> 19·925 <sup>116</sup> 20·041 <sup>159</sup> 20·200	66·46 <sup>211</sup> 64·35 <sup>223</sup> 62·12 <sup>225</sup> 59·87
Mean Place Sec $\delta$ , Tan $\delta$	18·589 1·253	53·63 —0·755	40·165 1·637	30·82 +1·297	18·777 1·025	56·40 +0·224	
L $\alpha$ , L $\delta$ $\omega$ $\alpha$ , $\omega$ $\delta$	+0·02 —0·01	—0·01 —1·0	—0·03 +0·01	—0·01 —1·0	—0·01 0·00	—0·01 —1·0	
AUTHORITY	A. E.		A. E.		A. E.		

# APPARENT PLACES OF STARS, 1922. 391

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\theta$ Scorpii. Mag. 2.0		$\kappa$ Scorpii. Mag. 2.5		$\eta$ Pavonis. Mag. 3.6	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 17 <sup>m</sup> 31	<sup>°</sup> 42 <sup>'</sup> 56	<sup>h</sup> 17 <sup>m</sup> 37	<sup>°</sup> 38 <sup>'</sup> 59	<sup>h</sup> 17 <sup>m</sup> 38	<sup>°</sup> 64 <sup>'</sup> 40
Jan.	0.9 41.312 <sub>262</sub> 10.9 41.574 <sub>305</sub> 20.9 41.879 <sub>338</sub> 30.9 42.217 <sub>362</sub>	46.68 92 45.76 72 45.04 56 44.48 38	4.112 <sub>243</sub> 4.355 <sub>284</sub> 4.639 <sub>316</sub> 4.955 <sub>339</sub>	16.65 72 15.93 58 15.35 42 14.93 27	1.93 38 2.31 47 2.78 52 3.30 58	65.69 207 63.62 181 61.81 152 60.29 121
Feb.	9.8 42.579 <sub>379</sub> 19.8 42.958 <sub>389</sub>	44.10 19 43.91 3	5.294 <sub>356</sub> 5.650 <sub>366</sub>	14.66 14 14.52 2	3.88 61 4.49 63	59.08 86 58.22 49
Mar.	1.8 43.347 <sub>392</sub> 11.8 43.739 <sub>389</sub> 21.7 44.128 <sub>380</sub> 31.7 44.508 <sub>368</sub>	43.88 12 44.00 26 44.26 40 44.66 52	6.016 <sub>369</sub> 6.385 <sub>367</sub> 6.752 <sub>361</sub> 7.113 <sub>350</sub>	14.50 10 14.60 20 14.80 30 15.10 38	5.12 65 5.77 64 6.41 63 7.04 61	57.73 18 57.55 18 57.73 51 58.24 84
Apr.	10.7 44.876 <sub>350</sub> 20.7 45.226 <sub>326</sub>	45.18 64 45.82 76	7.463 <sub>334</sub> 7.797 <sub>314</sub>	15.48 47 15.95 56	7.65 58 8.23 54	59.08 113 60.21 140
May	30.6 45.552 <sub>299</sub> 10.6 45.851 <sub>268</sub> 20.6 46.119 <sub>229</sub> 30.5 46.348 <sub>187</sub>	46.58 87 47.45 96 48.41 106 49.47 113	8.111 <sub>289</sub> 8.400 <sub>260</sub> 8.660 <sub>224</sub> 8.884 <sub>184</sub>	16.51 65 17.16 73 17.89 82 18.71 88	8.77 49 9.26 43 9.69 36 10.05 29	61.61 166 63.27 188 65.15 205 67.20 219
June	9.5 46.535 <sub>140</sub> 19.5 46.675 <sub>88</sub> 29.5 46.763 <sub>35</sub>	50.60 116 51.76 120 52.96 118	9.068 <sub>140</sub> 9.208 <sub>93</sub> 9.301 <sub>42</sub>	19.59 93 20.52 97 21.49 96	10.34 20 10.54 12 10.66 3	69.39 226 71.65 228 73.93 223
July	9.4 46.798 <sub>18</sub> 19.4 46.780 <sub>73</sub> 29.4 46.707 <sub>120</sub>	54.14 112 55.26 104 56.30 91	9.343 <sub>9</sub> 9.334 <sub>60</sub> 9.274 <sub>107</sub>	22.45 93 23.38 88 24.26 77	10.69 7 10.62 15 10.47 24	76.16 214 78.30 196 80.26 173
Aug.	8.4 46.587 <sub>165</sub> 18.3 46.422 <sub>203</sub>	57.21 72 57.93 53	9.167 <sub>150</sub> 9.017 <sub>186</sub>	25.03 63 25.66 47	10.23 31 9.92 37	81.99 142 83.41 107
Sept.	28.3 46.219 <sub>230</sub> 7.3 45.989 <sub>247</sub> 17.2 45.742 <sub>249</sub> 27.2 45.493 <sub>241</sub>	58.46 29 58.75 4 58.79 22 58.57 49	8.831 <sub>214</sub> 8.617 <sub>229</sub> 8.388 <sub>234</sub> 8.154 <sub>226</sub>	26.13 28 26.41 6 26.47 16 26.31 39	9.55 41 9.14 45 8.69 45 8.24 43	84.48 67 85.15 23 85.38 22 85.16 68
Oct.	7.2 45.252 <sub>215</sub> 17.2 45.037 <sub>178</sub> 27.1 44.859 <sub>134</sub>	58.08 72 57.36 93 56.43 108	7.928 <sub>205</sub> 7.723 <sub>171</sub> 7.552 <sub>128</sub>	25.92 58 25.34 76 24.58 91	7.81 41 7.40 34 7.06 27	84.48 109 83.39 150 81.89 183
Nov.	6.1 44.725 <sub>76</sub> 16.1 44.649 <sub>14</sub> 26.1 44.635 <sub>51</sub>	55.35 121 54.14 127 52.87 126	7.424 <sub>75</sub> 7.349 <sub>17</sub> 7.332 <sub>44</sub>	23.67 99 22.68 104 21.64 104	6.79 18 6.61 8 6.53 3	80.06 210 77.96 228 75.68 239
Dec.	6.0 44.686 <sub>114</sub> 16.0 44.800 <sub>176</sub> 26.0 44.976 <sub>230</sub> 35.9 45.206	51.61 122 50.39 112 49.27 97 48.30	7.376 <sub>104</sub> 7.480 <sub>161</sub> 7.641 <sub>215</sub> 7.856	20.60 99 19.61 89 18.72 78 17.94	6.56 13 6.69 24 6.93 33 7.26	73.29 237 70.92 232 68.60 217 66.43
Mean Place	42.623	58.83	5.362	28.21	4.33	79.14
Sec $\delta$ , Tan $\delta$	1.366	-0.931	1.287	-0.809	2.339	-2.114
L $\alpha$ , L $\delta$	+0.02	-0.1	+0.02	0.0	+0.05	0.0
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	-1.0	-0.01	-1.0	-0.01	-1.0
AUTHORITY	A. E.		A. N.		A. E.	

# 392 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		$\beta$ Ophiuchi. Mag. 2.9		$\epsilon$ Scorpii. Mag. 3.1		$\mu$ Herculis. Mag. 3.5	
		R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
		<sup>h</sup> 17	<sup>m</sup> 39	<sup>h</sup> 17	<sup>m</sup> 42	<sup>h</sup> 17	<sup>m</sup> 43
		<sup>s</sup> 4	<sup>s</sup> 35	<sup>s</sup> 40	<sup>s</sup> 5	<sup>s</sup> 27	<sup>s</sup> 45
Jan.	1.0	36.078 <sup>178</sup>	63.13 <sup>177</sup>	6.318 <sup>240</sup>	41.86 <sup>82</sup>	23.009 <sup>166</sup>	61.25 <sup>285</sup>
	10.9	36.256 <sup>212</sup>	61.36 <sup>171</sup>	6.558 <sup>282</sup>	41.04 <sup>67</sup>	23.175 <sup>206</sup>	58.40 <sup>269</sup>
	20.9	36.468 <sup>238</sup>	59.65 <sup>159</sup>	6.840 <sup>316</sup>	40.37 <sup>52</sup>	23.381 <sup>237</sup>	55.71 <sup>244</sup>
	30.9	36.706 <sup>257</sup>	58.06 <sup>138</sup>	7.156 <sup>341</sup>	39.85 <sup>36</sup>	23.618 <sup>265</sup>	53.27 <sup>212</sup>
Feb.	9.8	36.963 <sup>271</sup>	56.68 <sup>112</sup>	7.497 <sup>358</sup>	39.49 <sup>23</sup>	23.883 <sup>284</sup>	51.15 <sup>168</sup>
	19.8	37.234 <sup>280</sup>	55.56 <sup>82</sup>	7.855 <sup>370</sup>	39.26 <sup>9</sup>	24.167 <sup>297</sup>	49.47 <sup>119</sup>
Mar.	1.8	37.514 <sup>284</sup>	54.74 <sup>48</sup>	8.225 <sup>373</sup>	39.17 <sup>2</sup>	24.464 <sup>302</sup>	48.28 <sup>67</sup>
	11.8	37.798 <sup>282</sup>	54.26 <sup>13</sup>	8.598 <sup>373</sup>	39.19 <sup>15</sup>	24.766 <sup>304</sup>	47.61 <sup>12</sup>
	21.7	38.080 <sup>279</sup>	54.13 <sup>23</sup>	8.971 <sup>368</sup>	39.34 <sup>25</sup>	25.070 <sup>298</sup>	47.49 <sup>41</sup>
	31.7	38.359 <sup>268</sup>	54.36 <sup>54</sup>	9.339 <sup>357</sup>	39.59 <sup>35</sup>	25.368 <sup>287</sup>	47.90 <sup>89</sup>
Apr.	10.7	38.627 <sup>257</sup>	54.90 <sup>86</sup>	9.696 <sup>342</sup>	39.94 <sup>45</sup>	25.655 <sup>271</sup>	48.79 <sup>137</sup>
	20.7	38.884 <sup>241</sup>	55.76 <sup>110</sup>	10.038 <sup>322</sup>	40.39 <sup>56</sup>	25.926 <sup>253</sup>	50.16 <sup>178</sup>
	30.6	39.125 <sup>220</sup>	56.86 <sup>131</sup>	10.360 <sup>298</sup>	40.95 <sup>65</sup>	26.179 <sup>226</sup>	51.94 <sup>212</sup>
May	10.6	39.345 <sup>195</sup>	58.17 <sup>147</sup>	10.658 <sup>268</sup>	41.60 <sup>75</sup>	26.405 <sup>196</sup>	54.06 <sup>236</sup>
	20.6	39.540 <sup>168</sup>	59.64 <sup>156</sup>	10.926 <sup>233</sup>	42.35 <sup>84</sup>	26.601 <sup>164</sup>	56.42 <sup>252</sup>
	30.5	39.708 <sup>137</sup>	61.20 <sup>159</sup>	11.159 <sup>192</sup>	43.19 <sup>92</sup>	26.765 <sup>129</sup>	58.94 <sup>261</sup>
June	9.5	39.845 <sup>103</sup>	62.79 <sup>159</sup>	11.351 <sup>148</sup>	44.11 <sup>98</sup>	26.894 <sup>87</sup>	61.55 <sup>262</sup>
	19.5	39.948 <sup>65</sup>	64.38 <sup>153</sup>	11.499 <sup>99</sup>	45.09 <sup>102</sup>	26.981 <sup>46</sup>	64.17 <sup>257</sup>
	29.5	40.013 <sup>27</sup>	65.91 <sup>144</sup>	11.598 <sup>48</sup>	46.11 <sup>102</sup>	27.027 <sup>3</sup>	66.74 <sup>242</sup>
July	9.4	40.040 <sup>13</sup>	67.35 <sup>131</sup>	11.646 <sup>4</sup>	47.13 <sup>100</sup>	27.030 <sup>41</sup>	69.16 <sup>223</sup>
	19.4	40.027 <sup>51</sup>	68.66 <sup>116</sup>	11.642 <sup>57</sup>	48.13 <sup>94</sup>	26.989 <sup>82</sup>	71.39 <sup>200</sup>
	29.4	39.976 <sup>89</sup>	69.82 <sup>98</sup>	11.585 <sup>105</sup>	49.07 <sup>84</sup>	26.907 <sup>120</sup>	73.39 <sup>169</sup>
Aug.	8.4	39.887 <sup>121</sup>	70.80 <sup>80</sup>	11.480 <sup>149</sup>	49.91 <sup>70</sup>	26.787 <sup>157</sup>	75.08 <sup>137</sup>
	18.3	39.766 <sup>148</sup>	71.60 <sup>60</sup>	11.331 <sup>187</sup>	50.61 <sup>53</sup>	26.630 <sup>181</sup>	76.45 <sup>105</sup>
	28.3	39.618 <sup>169</sup>	72.20 <sup>39</sup>	11.144 <sup>216</sup>	51.14 <sup>33</sup>	26.449 <sup>208</sup>	77.50 <sup>67</sup>
Sept.	7.3	39.449 <sup>183</sup>	72.59 <sup>20</sup>	10.928 <sup>233</sup>	51.47 <sup>11</sup>	26.241 <sup>223</sup>	78.17 <sup>28</sup>
	17.2	39.266 <sup>187</sup>	72.79 <sup>3</sup>	10.695 <sup>238</sup>	51.58 <sup>12</sup>	26.018 <sup>225</sup>	78.45 <sup>9</sup>
	27.2	39.079 <sup>180</sup>	72.76 <sup>23</sup>	10.457 <sup>232</sup>	51.46 <sup>36</sup>	25.793 <sup>220</sup>	78.36 <sup>53</sup>
Oct.	7.2	38.899 <sup>167</sup>	72.53 <sup>47</sup>	10.225 <sup>210</sup>	51.10 <sup>57</sup>	25.573 <sup>208</sup>	77.83 <sup>93</sup>
	17.2	38.732 <sup>138</sup>	72.06 <sup>69</sup>	10.015 <sup>179</sup>	50.53 <sup>77</sup>	25.365 <sup>180</sup>	76.90 <sup>130</sup>
	27.1	38.594 <sup>111</sup>	71.37 <sup>91</sup>	9.836 <sup>134</sup>	49.76 <sup>92</sup>	25.185 <sup>147</sup>	75.60 <sup>169</sup>
Nov.	6.1	38.483 <sup>67</sup>	70.46 <sup>113</sup>	9.702 <sup>83</sup>	48.84 <sup>103</sup>	25.038 <sup>104</sup>	73.91 <sup>204</sup>
	16.1	38.416 <sup>25</sup>	69.33 <sup>134</sup>	9.619 <sup>24</sup>	47.81 <sup>109</sup>	24.934 <sup>61</sup>	71.87 <sup>236</sup>
	26.1	38.391 <sup>23</sup>	67.99 <sup>152</sup>	9.595 <sup>38</sup>	46.72 <sup>110</sup>	24.873 <sup>9</sup>	69.51 <sup>257</sup>
Dec.	6.0	38.414 <sup>69</sup>	66.47 <sup>164</sup>	9.633 <sup>99</sup>	45.62 <sup>106</sup>	24.864 <sup>42</sup>	66.94 <sup>280</sup>
	16.0	38.483 <sup>115</sup>	64.83 <sup>176</sup>	9.732 <sup>157</sup>	44.56 <sup>99</sup>	24.906 <sup>90</sup>	64.14 <sup>289</sup>
	26.0	38.598 <sup>155</sup>	63.07 <sup>180</sup>	9.889 <sup>211</sup>	43.57 <sup>86</sup>	24.996 <sup>139</sup>	61.25 <sup>291</sup>
	35.9	38.753	61.27	10.100	42.71	25.135	58.34
Mean Place		37.128	55.64	7.610	53.30	24.309	55.38
Sec $\delta$ , Tan $\delta$		1.003	+0.080	1.307	-0.842	1.130	+0.526
L $\alpha$ , L $\delta$		0.00	0.0	+0.02	0.0	-0.01	0.0
$\omega$ $\alpha$ , $\omega$ $\delta$		0.00	-1.0	0.00	-1.0	0.00	-1.0
AUTHORITY		A. E.		A. N.		A. E.	

# APPARENT PLACES OF STARS, 1922. 393

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		89 Herculis. Mag. 5.5		ν Ophiuchi. Mag. 3.5		γ Draconis. Mag. 2.4	
		R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
		<sup>h</sup> <sup>m</sup> 17 52	<sup>°</sup> <sup>'</sup> 26 3	<sup>h</sup> <sup>m</sup> 17 54	<sup>°</sup> <sup>'</sup> 9 45	<sup>h</sup> <sup>m</sup> 17 54	<sup>°</sup> <sup>'</sup> 51 29
Jan.	1.0	15.143 <sup>158</sup>	47.78 <sup>274</sup>	42.858 <sup>176</sup>	46.16 <sup>93</sup>	45.644 <sup>156</sup>	56.55 <sup>345</sup>
	10.9	15.301 <sup>197</sup>	45.04 <sup>262</sup>	43.034 <sup>211</sup>	47.09 <sup>94</sup>	45.800 <sup>216</sup>	53.10 <sup>327</sup>
	20.9	15.498 <sup>230</sup>	42.42 <sup>239</sup>	43.245 <sup>237</sup>	48.03 <sup>89</sup>	46.016 <sup>271</sup>	49.83 <sup>298</sup>
	30.9	15.728 <sup>256</sup>	40.03 <sup>207</sup>	43.482 <sup>257</sup>	48.92 <sup>79</sup>	46.287 <sup>316</sup>	46.85 <sup>259</sup>
Feb.	9.9	15.984 <sup>276</sup>	37.96 <sup>167</sup>	43.739 <sup>274</sup>	49.71 <sup>67</sup>	46.603 <sup>353</sup>	44.26 <sup>206</sup>
	19.8	16.260 <sup>290</sup>	36.29 <sup>121</sup>	44.013 <sup>283</sup>	50.38 <sup>50</sup>	46.956 <sup>378</sup>	42.20 <sup>149</sup>
Mar.	1.8	16.550 <sup>299</sup>	35.08 <sup>69</sup>	44.296 <sup>290</sup>	50.88 <sup>31</sup>	47.334 <sup>395</sup>	40.71 <sup>84</sup>
	11.8	16.849 <sup>300</sup>	34.39 <sup>17</sup>	44.586 <sup>290</sup>	51.19 <sup>9</sup>	47.729 <sup>400</sup>	39.87 <sup>22</sup>
	21.7	17.149 <sup>297</sup>	34.22 <sup>37</sup>	44.876 <sup>289</sup>	51.28 <sup>12</sup>	48.129 <sup>397</sup>	39.65 <sup>45</sup>
	31.7	17.446 <sup>287</sup>	34.59 <sup>86</sup>	45.165 <sup>281</sup>	51.16 <sup>31</sup>	48.526 <sup>382</sup>	40.10 <sup>108</sup>
Apr.	10.7	17.733 <sup>275</sup>	35.45 <sup>133</sup>	45.446 <sup>272</sup>	50.85 <sup>48</sup>	48.908 <sup>359</sup>	41.18 <sup>164</sup>
	20.7	18.008 <sup>256</sup>	36.78 <sup>173</sup>	45.718 <sup>260</sup>	50.37 <sup>63</sup>	49.267 <sup>327</sup>	42.82 <sup>216</sup>
	30.6	18.264 <sup>233</sup>	38.51 <sup>206</sup>	45.978 <sup>240</sup>	49.74 <sup>75</sup>	49.594 <sup>289</sup>	44.98 <sup>254</sup>
May	10.6	18.497 <sup>206</sup>	40.57 <sup>232</sup>	46.218 <sup>219</sup>	48.99 <sup>83</sup>	49.883 <sup>244</sup>	47.52 <sup>291</sup>
	20.6	18.703 <sup>174</sup>	42.89 <sup>249</sup>	46.437 <sup>191</sup>	48.16 <sup>85</sup>	50.127 <sup>192</sup>	50.43 <sup>312</sup>
	30.6	18.877 <sup>138</sup>	45.38 <sup>258</sup>	46.628 <sup>162</sup>	47.31 <sup>86</sup>	50.319 <sup>141</sup>	53.55 <sup>326</sup>
June	9.5	19.015 <sup>99</sup>	47.96 <sup>261</sup>	46.790 <sup>128</sup>	46.45 <sup>83</sup>	50.460 <sup>77</sup>	56.81 <sup>330</sup>
	19.5	19.114 <sup>58</sup>	50.57 <sup>254</sup>	46.918 <sup>90</sup>	45.62 <sup>77</sup>	50.537 <sup>20</sup>	60.11 <sup>325</sup>
	29.5	19.172 <sup>15</sup>	53.11 <sup>242</sup>	47.008 <sup>48</sup>	44.85 <sup>71</sup>	50.557 <sup>38</sup>	63.36 <sup>312</sup>
July	9.4	19.187 <sup>28</sup>	55.53 <sup>225</sup>	47.056 <sup>9</sup>	44.14 <sup>62</sup>	50.519 <sup>102</sup>	66.48 <sup>289</sup>
	19.4	19.159 <sup>71</sup>	57.78 <sup>201</sup>	47.065 <sup>32</sup>	43.52 <sup>51</sup>	50.417 <sup>157</sup>	69.37 <sup>261</sup>
	29.4	19.088 <sup>110</sup>	59.79 <sup>173</sup>	47.033 <sup>72</sup>	43.01 <sup>42</sup>	50.260 <sup>207</sup>	71.98 <sup>226</sup>
Aug.	8.4	18.978 <sup>146</sup>	61.52 <sup>143</sup>	46.961 <sup>107</sup>	42.59 <sup>35</sup>	50.053 <sup>255</sup>	74.24 <sup>187</sup>
	18.3	18.832 <sup>176</sup>	62.95 <sup>110</sup>	46.854 <sup>138</sup>	42.24 <sup>25</sup>	49.798 <sup>295</sup>	76.11 <sup>146</sup>
	28.3	18.656 <sup>200</sup>	64.05 <sup>74</sup>	46.716 <sup>162</sup>	41.99 <sup>16</sup>	49.503 <sup>325</sup>	77.57 <sup>97</sup>
Sept.	7.3	18.456 <sup>216</sup>	64.79 <sup>36</sup>	46.554 <sup>179</sup>	41.83 <sup>9</sup>	49.178 <sup>343</sup>	78.54 <sup>49</sup>
	17.3	18.240 <sup>221</sup>	65.15 <sup>3</sup>	46.375 <sup>183</sup>	41.74 <sup>1</sup>	48.835 <sup>351</sup>	79.03 <sup>1</sup>
	27.2	18.019 <sup>218</sup>	65.12 <sup>40</sup>	46.192 <sup>182</sup>	41.73 <sup>6</sup>	48.484 <sup>346</sup>	79.02 <sup>52</sup>
Oct.	7.2	17.801 <sup>203</sup>	64.72 <sup>80</sup>	46.010 <sup>167</sup>	41.79 <sup>15</sup>	48.138 <sup>331</sup>	78.50 <sup>104</sup>
	17.2	17.598 <sup>181</sup>	63.92 <sup>119</sup>	45.843 <sup>144</sup>	41.94 <sup>23</sup>	47.807 <sup>303</sup>	77.46 <sup>155</sup>
	27.1	17.417 <sup>148</sup>	62.73 <sup>155</sup>	45.699 <sup>114</sup>	42.17 <sup>35</sup>	47.504 <sup>263</sup>	75.91 <sup>201</sup>
Nov.	6.1	17.269 <sup>109</sup>	61.18 <sup>190</sup>	45.585 <sup>71</sup>	42.52 <sup>45</sup>	47.241 <sup>214</sup>	73.90 <sup>245</sup>
	16.1	17.160 <sup>63</sup>	59.28 <sup>220</sup>	45.514 <sup>30</sup>	42.97 <sup>58</sup>	47.027 <sup>155</sup>	71.45 <sup>285</sup>
	26.1	17.097 <sup>15</sup>	57.08 <sup>247</sup>	45.484 <sup>18</sup>	43.55 <sup>67</sup>	46.872 <sup>90</sup>	68.60 <sup>314</sup>
Dec.	6.0	17.082 <sup>35</sup>	54.61 <sup>266</sup>	45.502 <sup>67</sup>	44.22 <sup>79</sup>	46.782 <sup>22</sup>	65.46 <sup>341</sup>
	16.0	17.117 <sup>84</sup>	51.95 <sup>277</sup>	45.569 <sup>111</sup>	45.01 <sup>88</sup>	46.760 <sup>45</sup>	62.05 <sup>350</sup>
	26.0	17.201 <sup>131</sup>	49.18 <sup>281</sup>	45.680 <sup>152</sup>	45.89 <sup>94</sup>	46.805 <sup>116</sup>	58.55 <sup>353</sup>
	36.0	17.332	46.37	45.832	46.83	46.921	55.02
Mean Place		16.414	41.36	43.904	54.89	47.680	50.93
Sec δ, Tan δ		1.113	+0.489	1.015	-0.172	1.606	+1.257
L α, L δ		-0.01	0.0	0.00	0.0	-0.03	0.0
ω α, ω δ		0.00	-1.0	0.00	-1.0	0.00	-1.0
AUTHORITY				A. E.		A. E.	

## 394 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\gamma$ Sagittarii. Mag. 3.1		72 Ophiuchi. Mag. 3.7		$\mu$ Sagittarii. Mag. 4.0		
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.	
	<sup>h</sup> 18 <sup>m</sup> 0	<sup>°</sup> 30 <sup>'</sup> 25	<sup>h</sup> 18 <sup>m</sup> 3	<sup>°</sup> 9 <sup>'</sup> 33	<sup>h</sup> 18 <sup>m</sup> 9	<sup>°</sup> 21 <sup>'</sup> 4	
Jan.	1.0 10.9 20.9 30.9	46.539 <sup>201</sup> 46.740 <sup>236</sup> 46.976 <sup>265</sup> 47.241 <sup>295</sup>	25.31 <sup>37</sup> 24.94 <sup>25</sup> 24.69 <sup>17</sup> 24.52 <sup>14</sup>	37.965 <sup>153</sup> 38.118 <sup>190</sup> 38.308 <sup>217</sup> 38.525 <sup>242</sup>	14.06 <sup>198</sup> 12.08 <sup>191</sup> 10.17 <sup>176</sup> 8.41 <sup>156</sup>	4.756 <sup>174</sup> 4.930 <sup>211</sup> 5.141 <sup>243</sup> 5.384 <sup>263</sup>	40.76 <sup>20</sup> 40.96 <sup>21</sup> 41.17 <sup>25</sup> 41.42 <sup>21</sup>
Feb.	9.9 19.8	47.536 <sup>310</sup> 47.846 <sup>323</sup>	24.38 <sup>10</sup> 24.28 <sup>4</sup>	38.767 <sup>257</sup> 39.024 <sup>271</sup>	6.85 <sup>127</sup> 5.58 <sup>91</sup>	5.647 <sup>283</sup> 5.930 <sup>296</sup>	41.63 <sup>19</sup> 41.82 <sup>14</sup>
Mar.	1.8 11.8 21.8 31.7	48.169 <sup>332</sup> 48.501 <sup>334</sup> 48.835 <sup>330</sup> 49.165 <sup>324</sup>	24.24 <sup>3</sup> 24.21 <sup>1</sup> 24.20 <sup>1</sup> 24.19 <sup>1</sup>	39.295 <sup>280</sup> 39.575 <sup>283</sup> 39.858 <sup>282</sup> 40.140 <sup>277</sup>	4.67 <sup>55</sup> 4.12 <sup>15</sup> 3.97 <sup>24</sup> 4.21 <sup>64</sup>	6.226 <sup>304</sup> 6.530 <sup>307</sup> 6.837 <sup>308</sup> 7.145 <sup>303</sup>	41.96 <sup>3</sup> 41.99 <sup>3</sup> 41.96 <sup>14</sup> 41.82 <sup>20</sup>
Apr.	10.7 20.7 30.6 10.6 20.6 30.6	49.489 <sup>317</sup> 49.806 <sup>301</sup> 50.107 <sup>280</sup> 50.387 <sup>258</sup> 50.645 <sup>229</sup> 50.874 <sup>191</sup>	24.20 <sup>1</sup> 24.21 <sup>4</sup> 24.25 <sup>12</sup> 24.37 <sup>17</sup> 24.54 <sup>21</sup> 24.75 <sup>29</sup>	40.417 <sup>267</sup> 40.684 <sup>254</sup> 40.938 <sup>235</sup> 41.173 <sup>213</sup> 41.386 <sup>185</sup> 41.571 <sup>156</sup>	4.85 <sup>97</sup> 5.82 <sup>127</sup> 7.09 <sup>151</sup> 8.60 <sup>170</sup> 10.30 <sup>184</sup> 12.14 <sup>190</sup>	7.448 <sup>295</sup> 7.743 <sup>282</sup> 8.025 <sup>269</sup> 8.294 <sup>243</sup> 8.537 <sup>219</sup> 8.756 <sup>185</sup>	41.62 <sup>27</sup> 41.35 <sup>33</sup> 41.02 <sup>34</sup> 40.68 <sup>36</sup> 40.32 <sup>32</sup> 40.00 <sup>27</sup>
June	9.5 19.5 29.5	51.065 <sup>154</sup> 51.219 <sup>110</sup> 51.329 <sup>65</sup>	25.04 <sup>37</sup> 25.41 <sup>41</sup> 25.82 <sup>47</sup>	41.727 <sup>121</sup> 41.848 <sup>84</sup> 41.932 <sup>43</sup>	14.04 <sup>190</sup> 15.94 <sup>184</sup> 17.78 <sup>176</sup>	8.941 <sup>152</sup> 9.093 <sup>111</sup> 9.204 <sup>68</sup>	39.73 <sup>23</sup> 39.50 <sup>15</sup> 39.35 <sup>11</sup>
July	9.5 19.4 29.4	51.394 <sup>19</sup> 51.413 <sup>30</sup> 51.383 <sup>75</sup>	26.29 <sup>50</sup> 26.79 <sup>52</sup> 27.31 <sup>50</sup>	41.975 <sup>3</sup> 41.978 <sup>37</sup> 41.941 <sup>79</sup>	19.54 <sup>163</sup> 21.17 <sup>144</sup> 22.61 <sup>125</sup>	9.272 <sup>24</sup> 9.296 <sup>17</sup> 9.279 <sup>64</sup>	39.24 <sup>2</sup> 39.22 <sup>4</sup> 39.26 <sup>9</sup>
Aug.	8.4 18.3 28.3 7.3 17.3 27.2	51.308 <sup>117</sup> 51.191 <sup>152</sup> 51.039 <sup>182</sup> 50.857 <sup>201</sup> 50.656 <sup>210</sup> 50.446 <sup>206</sup>	27.81 <sup>45</sup> 28.26 <sup>37</sup> 28.63 <sup>29</sup> 28.92 <sup>16</sup> 29.08 <sup>2</sup> 29.10 <sup>11</sup>	41.862 <sup>112</sup> 41.750 <sup>143</sup> 41.607 <sup>168</sup> 41.439 <sup>183</sup> 41.256 <sup>191</sup> 41.065 <sup>189</sup>	23.86 <sup>102</sup> 24.88 <sup>79</sup> 25.67 <sup>54</sup> 26.21 <sup>32</sup> 26.53 <sup>4</sup> 26.57 <sup>21</sup>	9.215 <sup>100</sup> 9.115 <sup>138</sup> 8.977 <sup>164</sup> 8.813 <sup>184</sup> 8.629 <sup>193</sup> 8.436 <sup>191</sup>	39.35 <sup>13</sup> 39.48 <sup>10</sup> 39.58 <sup>10</sup> 39.68 <sup>7</sup> 39.75 <sup>3</sup> 39.78 <sup>1</sup>
Sept.	7.2 17.2 27.2	50.240 <sup>192</sup> 50.048 <sup>165</sup> 49.883 <sup>131</sup>	28.99 <sup>23</sup> 28.76 <sup>37</sup> 28.39 <sup>44</sup>	40.876 <sup>180</sup> 40.696 <sup>157</sup> 40.539 <sup>128</sup>	26.36 <sup>48</sup> 25.88 <sup>75</sup> 25.13 <sup>101</sup>	8.245 <sup>179</sup> 8.066 <sup>158</sup> 7.908 <sup>124</sup>	39.79 <sup>3</sup> 39.76 <sup>7</sup> 39.69 <sup>6</sup>
Nov.	6.1 16.1 26.1	49.752 <sup>85</sup> 49.667 <sup>38</sup> 49.629 <sup>14</sup>	27.95 <sup>49</sup> 27.46 <sup>53</sup> 26.93 <sup>52</sup>	40.411 <sup>90</sup> 40.321 <sup>48</sup> 40.273 <sup>4</sup>	24.12 <sup>125</sup> 22.87 <sup>148</sup> 21.39 <sup>168</sup>	7.784 <sup>87</sup> 7.697 <sup>40</sup> 7.657 <sup>8</sup>	39.63 <sup>6</sup> 39.57 <sup>3</sup> 39.54 <sup>1</sup>
Dec.	6.0 16.0 26.0 36.0	49.643 <sup>71</sup> 49.714 <sup>124</sup> 49.838 <sup>170</sup> 50.008	26.41 <sup>50</sup> 25.91 <sup>45</sup> 25.46 <sup>36</sup> 25.10	40.269 <sup>42</sup> 40.311 <sup>87</sup> 40.398 <sup>129</sup> 40.527	19.71 <sup>186</sup> 17.85 <sup>196</sup> 15.89 <sup>201</sup> 13.88	7.665 <sup>59</sup> 7.724 <sup>106</sup> 7.830 <sup>150</sup> 7.980	39.55 <sup>7</sup> 39.62 <sup>12</sup> 39.74 <sup>19</sup> 39.93
Mean Place	47.742	35.27	39.064	6.40	5.878	49.94	
Sec. $\delta$ , Tan $\delta$	1.160	-0.587	1.014	+0.168	1.072	-0.385	
L $\alpha$ , L $\delta$	+0.02	0.0	0.00	0.0	+0.01	0.0	
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	-1.0	0.00	-1.0	0.00	-1.0	
AUTHORITY	A. E.		A. E.		A. E.		



# APPARENT PLACES OF STARS, 1922. 395

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\eta$ Sagittarii. Mag. 3.2		$\delta$ Sagittarii. Mag. 2.8		$\eta$ Serpentis. Mag. 3.4	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 18 <sup>m</sup> 12	<sup>°</sup> 36 <sup>'</sup> 46	<sup>h</sup> 18 <sup>m</sup> 15	<sup>°</sup> 29 <sup>'</sup> 51	<sup>h</sup> 18 <sup>m</sup> 17	<sup>°</sup> 2 <sup>'</sup> 54
Jan. 1.0	19.571 <sup>198</sup>	61.44 <sup>79</sup>	58.796 <sup>181</sup>	36.00 <sup>38</sup>	15.294 <sup>146</sup>	64.13 <sup>128</sup>
10.9	19.769 <sup>239</sup>	60.65 <sup>69</sup>	58.977 <sup>220</sup>	35.62 <sup>32</sup>	15.440 <sup>183</sup>	65.41 <sup>124</sup>
20.9	20.008 <sup>275</sup>	59.96 <sup>60</sup>	59.197 <sup>253</sup>	35.30 <sup>27</sup>	15.623 <sup>212</sup>	66.65 <sup>117</sup>
30.9	20.283 <sup>303</sup>	59.36 <sup>50</sup>	59.450 <sup>279</sup>	35.03 <sup>22</sup>	15.835 <sup>237</sup>	67.82 <sup>104</sup>
Feb. 9.9	20.586 <sup>325</sup>	58.86 <sup>41</sup>	59.729 <sup>300</sup>	34.81 <sup>19</sup>	16.072 <sup>254</sup>	68.86 <sup>82</sup>
19.8	20.911 <sup>340</sup>	58.45 <sup>33</sup>	60.029 <sup>314</sup>	34.62 <sup>17</sup>	16.326 <sup>266</sup>	69.68 <sup>62</sup>
Mar. 1.8	21.251 <sup>350</sup>	58.12 <sup>25</sup>	60.343 <sup>324</sup>	34.45 <sup>16</sup>	16.592 <sup>276</sup>	70.30 <sup>36</sup>
11.8	21.601 <sup>355</sup>	57.87 <sup>17</sup>	60.667 <sup>328</sup>	34.29 <sup>16</sup>	16.868 <sup>283</sup>	70.66 <sup>8</sup>
21.8	21.956 <sup>355</sup>	57.70 <sup>9</sup>	60.995 <sup>330</sup>	34.13 <sup>15</sup>	17.151 <sup>283</sup>	70.74 <sup>19</sup>
31.7	22.311 <sup>351</sup>	57.61 <sup>2</sup>	61.325 <sup>327</sup>	33.98 <sup>15</sup>	17.434 <sup>280</sup>	70.55 <sup>47</sup>
Apr. 10.7	22.662 <sup>342</sup>	57.59 <sup>7</sup>	61.652 <sup>319</sup>	33.83 <sup>13</sup>	17.714 <sup>276</sup>	70.08 <sup>69</sup>
20.7	23.004 <sup>328</sup>	57.66 <sup>16</sup>	61.971 <sup>307</sup>	33.70 <sup>9</sup>	17.990 <sup>264</sup>	69.39 <sup>91</sup>
30.6	23.332 <sup>309</sup>	57.82 <sup>26</sup>	62.278 <sup>290</sup>	33.61 <sup>5</sup>	18.254 <sup>247</sup>	68.48 <sup>108</sup>
May 10.6	23.641 <sup>284</sup>	58.08 <sup>37</sup>	62.568 <sup>268</sup>	33.56 <sup>2</sup>	18.501 <sup>228</sup>	67.40 <sup>119</sup>
20.6	23.925 <sup>254</sup>	58.45 <sup>48</sup>	62.836 <sup>240</sup>	33.58 <sup>10</sup>	18.729 <sup>200</sup>	66.21 <sup>125</sup>
30.6	24.179 <sup>218</sup>	58.93 <sup>58</sup>	63.076 <sup>208</sup>	33.68 <sup>18</sup>	18.929 <sup>174</sup>	64.96 <sup>127</sup>
June 9.5	24.397 <sup>176</sup>	59.51 <sup>69</sup>	63.284 <sup>169</sup>	33.86 <sup>26</sup>	19.103 <sup>142</sup>	63.69 <sup>127</sup>
19.5	24.573 <sup>131</sup>	60.20 <sup>76</sup>	63.453 <sup>127</sup>	34.12 <sup>35</sup>	19.245 <sup>103</sup>	62.42 <sup>120</sup>
29.5	24.704 <sup>81</sup>	60.96 <sup>82</sup>	63.580 <sup>81</sup>	34.47 <sup>42</sup>	19.348 <sup>64</sup>	61.22 <sup>117</sup>
July 9.5	24.785 <sup>29</sup>	61.78 <sup>86</sup>	63.661 <sup>34</sup>	34.89 <sup>47</sup>	19.412 <sup>23</sup>	60.05 <sup>100</sup>
19.4	24.814 <sup>22</sup>	62.64 <sup>85</sup>	63.695 <sup>14</sup>	35.36 <sup>50</sup>	19.435 <sup>17</sup>	59.05 <sup>87</sup>
29.4	24.792 <sup>72</sup>	63.49 <sup>82</sup>	63.681 <sup>61</sup>	35.86 <sup>50</sup>	19.418 <sup>59</sup>	58.18 <sup>74</sup>
Aug. 8.4	24.720 <sup>119</sup>	64.31 <sup>75</sup>	63.620 <sup>106</sup>	36.36 <sup>48</sup>	19.359 <sup>100</sup>	57.44 <sup>58</sup>
18.3	24.601 <sup>160</sup>	65.06 <sup>63</sup>	63.514 <sup>143</sup>	36.84 <sup>43</sup>	19.259 <sup>128</sup>	56.86 <sup>46</sup>
28.3	24.441 <sup>192</sup>	65.69 <sup>49</sup>	63.371 <sup>174</sup>	37.27 <sup>34</sup>	19.131 <sup>151</sup>	56.40 <sup>30</sup>
Sept. 7.3	24.249 <sup>215</sup>	66.18 <sup>31</sup>	63.197 <sup>197</sup>	37.61 <sup>24</sup>	18.980 <sup>174</sup>	56.10 <sup>16</sup>
17.3	24.034 <sup>227</sup>	66.49 <sup>13</sup>	63.000 <sup>207</sup>	37.85 <sup>11</sup>	18.806 <sup>183</sup>	55.94 <sup>1</sup>
27.2	23.807 <sup>227</sup>	66.62 <sup>8</sup>	62.793 <sup>208</sup>	37.96 <sup>2</sup>	18.623 <sup>185</sup>	55.95 <sup>14</sup>
Oct. 7.2	23.580 <sup>213</sup>	66.54 <sup>28</sup>	62.585 <sup>196</sup>	37.94 <sup>14</sup>	18.438 <sup>174</sup>	56.09 <sup>28</sup>
17.2	23.367 <sup>187</sup>	66.26 <sup>46</sup>	62.389 <sup>173</sup>	37.80 <sup>26</sup>	18.264 <sup>156</sup>	56.37 <sup>43</sup>
27.2	23.180 <sup>152</sup>	65.80 <sup>63</sup>	62.216 <sup>140</sup>	37.54 <sup>37</sup>	18.108 <sup>129</sup>	56.80 <sup>58</sup>
Nov. 6.1	23.028 <sup>105</sup>	65.17 <sup>75</sup>	62.076 <sup>98</sup>	37.17 <sup>43</sup>	17.979 <sup>90</sup>	57.38 <sup>75</sup>
16.1	22.923 <sup>54</sup>	64.42 <sup>84</sup>	61.978 <sup>50</sup>	36.74 <sup>49</sup>	17.889 <sup>49</sup>	58.13 <sup>90</sup>
26.1	22.869 <sup>3</sup>	63.58 <sup>89</sup>	61.928 <sup>2</sup>	36.25 <sup>49</sup>	17.840 <sup>8</sup>	59.03 <sup>104</sup>
Dec. 6.0	22.872 <sup>60</sup>	62.69 <sup>89</sup>	61.930 <sup>54</sup>	35.76 <sup>48</sup>	17.832 <sup>39</sup>	60.07 <sup>114</sup>
16.0	22.932 <sup>116</sup>	61.80 <sup>86</sup>	61.984 <sup>106</sup>	35.28 <sup>45</sup>	17.871 <sup>81</sup>	61.21 <sup>126</sup>
26.0	23.048 <sup>167</sup>	60.94 <sup>80</sup>	62.090 <sup>154</sup>	34.83 <sup>39</sup>	17.952 <sup>126</sup>	62.47 <sup>128</sup>
36.0	23.215	60.14	62.244	34.44	18.078	63.75
Mean Place	20.904	71.28	60.023	45.38	16.362	72.42
Sec $\delta$ , Tan $\delta$	1.249	-0.748	1.153	-0.574	1.001	-0.051
L $\alpha$ , L $\delta$	+0.02	0.0	+0.02	0.0	0.00	0.0
$\omega \alpha$ , $\omega \delta$	0.00	-1.0	0.00	-1.0	0.00	-1.0
AUTHORITY	A. N.		A. N.		A. E.	

## 396 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Sagittarii. Mag. 2.0		α Telescopii. Mag. 3.8		λ Sagittarii. Mag. 2.9	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 18	<sup>m</sup> 18	<sup>h</sup> 18	<sup>m</sup> 21	<sup>h</sup> 18	<sup>m</sup> 23
	<sup>s</sup>	<sup>°</sup> 34	<sup>s</sup>	<sup>°</sup> 46	<sup>s</sup>	<sup>°</sup> 25
	18	25	21	0	23	27
Jan. 1.0	58.352 <sup>187</sup>	12.51 <sup>66</sup>	9.811 <sup>210</sup>	37.10 <sup>137</sup>	8.214 <sup>167</sup>	49.12 <sup>14</sup>
11.0	58.539 <sup>226</sup>	11.85 <sup>60</sup>	10.021 <sup>257</sup>	35.73 <sup>126</sup>	8.381 <sup>205</sup>	48.98 <sup>10</sup>
20.9	58.765 <sup>261</sup>	11.25 <sup>53</sup>	10.278 <sup>299</sup>	34.47 <sup>115</sup>	8.586 <sup>237</sup>	48.88 <sup>7</sup>
30.9	59.026 <sup>289</sup>	10.72 <sup>45</sup>	10.577 <sup>337</sup>	33.32 <sup>99</sup>	8.823 <sup>263</sup>	48.81 <sup>6</sup>
Feb. 9.9	59.315 <sup>312</sup>	10.27 <sup>40</sup>	10.914 <sup>363</sup>	32.33 <sup>84</sup>	9.086 <sup>283</sup>	48.75 <sup>7</sup>
19.8	59.627 <sup>327</sup>	9.87 <sup>32</sup>	11.277 <sup>384</sup>	31.49 <sup>67</sup>	9.369 <sup>298</sup>	48.68 <sup>9</sup>
Mar. 1.8	59.954 <sup>341</sup>	9.55 <sup>27</sup>	11.661 <sup>396</sup>	30.82 <sup>51</sup>	9.667 <sup>309</sup>	48.59 <sup>13</sup>
11.8	60.295 <sup>345</sup>	9.28 <sup>23</sup>	12.057 <sup>406</sup>	30.31 <sup>34</sup>	9.976 <sup>314</sup>	48.46 <sup>17</sup>
21.8	60.640 <sup>346</sup>	9.05 <sup>17</sup>	12.463 <sup>406</sup>	29.97 <sup>19</sup>	10.290 <sup>317</sup>	48.29 <sup>22</sup>
31.7	60.986 <sup>343</sup>	8.88 <sup>12</sup>	12.869 <sup>404</sup>	29.78 <sup>1</sup>	10.607 <sup>315</sup>	48.07 <sup>26</sup>
Apr. 10.7	61.329 <sup>334</sup>	8.76 <sup>5</sup>	13.273 <sup>395</sup>	29.77 <sup>17</sup>	10.922 <sup>310</sup>	47.81 <sup>27</sup>
20.7	61.663 <sup>323</sup>	8.71 <sup>3</sup>	13.668 <sup>379</sup>	29.94 <sup>35</sup>	11.232 <sup>298</sup>	47.54 <sup>28</sup>
30.7	61.986 <sup>307</sup>	8.74 <sup>12</sup>	14.047 <sup>359</sup>	30.29 <sup>54</sup>	11.530 <sup>284</sup>	47.26 <sup>27</sup>
May 10.6	62.293 <sup>283</sup>	8.86 <sup>20</sup>	14.406 <sup>329</sup>	30.83 <sup>70</sup>	11.814 <sup>263</sup>	46.99 <sup>22</sup>
20.6	62.576 <sup>254</sup>	9.06 <sup>32</sup>	14.735 <sup>295</sup>	31.53 <sup>87</sup>	12.077 <sup>237</sup>	46.77 <sup>17</sup>
30.6	62.830 <sup>219</sup>	9.38 <sup>42</sup>	15.030 <sup>256</sup>	32.40 <sup>103</sup>	12.314 <sup>206</sup>	46.60 <sup>10</sup>
June 9.5	63.049 <sup>179</sup>	9.80 <sup>51</sup>	15.286 <sup>206</sup>	33.43 <sup>113</sup>	12.520 <sup>171</sup>	46.50 <sup>1</sup>
19.5	63.228 <sup>136</sup>	10.31 <sup>61</sup>	15.492 <sup>155</sup>	34.56 <sup>125</sup>	12.691 <sup>129</sup>	46.49 <sup>7</sup>
29.5	63.364 <sup>87</sup>	10.92 <sup>66</sup>	15.647 <sup>98</sup>	35.81 <sup>131</sup>	12.820 <sup>86</sup>	46.56 <sup>15</sup>
July 9.5	63.451 <sup>36</sup>	11.58 <sup>74</sup>	15.745 <sup>37</sup>	37.12 <sup>135</sup>	12.906 <sup>40</sup>	46.71 <sup>22</sup>
19.4	63.487 <sup>13</sup>	12.32 <sup>75</sup>	15.782 <sup>21</sup>	38.47 <sup>134</sup>	12.946 <sup>7</sup>	46.93 <sup>28</sup>
29.4	63.474 <sup>64</sup>	13.07 <sup>71</sup>	15.761 <sup>80</sup>	39.81 <sup>126</sup>	12.939 <sup>53</sup>	47.21 <sup>31</sup>
Aug. 8.4	63.410 <sup>109</sup>	13.78 <sup>70</sup>	15.681 <sup>134</sup>	41.07 <sup>116</sup>	12.886 <sup>95</sup>	47.52 <sup>32</sup>
18.4	63.301 <sup>149</sup>	14.48 <sup>58</sup>	15.547 <sup>180</sup>	42.23 <sup>98</sup>	12.791 <sup>133</sup>	47.84 <sup>31</sup>
28.3	63.152 <sup>183</sup>	15.06 <sup>48</sup>	15.367 <sup>222</sup>	43.21 <sup>76</sup>	12.658 <sup>165</sup>	48.15 <sup>27</sup>
Sept. 7.3	62.969 <sup>205</sup>	15.54 <sup>31</sup>	15.145 <sup>247</sup>	43.97 <sup>51</sup>	12.493 <sup>186</sup>	48.42 <sup>21</sup>
17.3	62.764 <sup>219</sup>	15.85 <sup>17</sup>	14.898 <sup>265</sup>	44.48 <sup>24</sup>	12.307 <sup>198</sup>	48.63 <sup>14</sup>
27.2	62.545 <sup>219</sup>	16.02 <sup>2</sup>	14.633 <sup>264</sup>	44.72 <sup>6</sup>	12.109 <sup>200</sup>	48.77 <sup>5</sup>
Oct. 7.2	62.326 <sup>209</sup>	16.00 <sup>18</sup>	14.369 <sup>254</sup>	44.66 <sup>35</sup>	11.909 <sup>190</sup>	48.82 <sup>4</sup>
17.2	62.117 <sup>184</sup>	15.82 <sup>38</sup>	14.115 <sup>225</sup>	44.31 <sup>63</sup>	11.719 <sup>169</sup>	48.78 <sup>11</sup>
27.2	61.933 <sup>151</sup>	15.44 <sup>50</sup>	13.890 <sup>187</sup>	43.68 <sup>88</sup>	11.550 <sup>139</sup>	48.67 <sup>18</sup>
Nov. 6.1	61.782 <sup>106</sup>	14.94 <sup>61</sup>	13.703 <sup>137</sup>	42.80 <sup>108</sup>	11.411 <sup>99</sup>	48.49 <sup>22</sup>
16.1	61.676 <sup>58</sup>	14.33 <sup>70</sup>	13.566 <sup>78</sup>	41.72 <sup>126</sup>	11.312 <sup>54</sup>	48.27 <sup>24</sup>
26.1	61.618 <sup>5</sup>	13.63 <sup>75</sup>	13.488 <sup>16</sup>	40.46 <sup>138</sup>	11.258 <sup>4</sup>	48.03 <sup>24</sup>
Dec. 6.1	61.613 <sup>54</sup>	12.88 <sup>76</sup>	13.472 <sup>49</sup>	39.08 <sup>144</sup>	11.254 <sup>45</sup>	47.79 <sup>22</sup>
16.0	61.667 <sup>105</sup>	12.12 <sup>73</sup>	13.521 <sup>114</sup>	37.64 <sup>144</sup>	11.299 <sup>94</sup>	47.57 <sup>18</sup>
26.0	61.772 <sup>156</sup>	11.39 <sup>70</sup>	13.635 <sup>175</sup>	36.20 <sup>139</sup>	11.393 <sup>141</sup>	47.39 <sup>13</sup>
36.0	61.928	10.69	13.810	34.81	11.534	47.26
Mean Place	59.662	21.94	11.414	46.85	9.401	58.07
Sec δ, Tan δ	1.212	-0.685	1.440	-1.036	1.108	-0.476
L α, L δ	+0.02	0.0	+0.03	0.0	+0.01	0.0
ω α, ω δ	0.00	-1.0	+0.01	-1.0	0.00	-1.0
AUTHORITY	A. E.		A. E.		A. N.	

# APPARENT PLACES OF STARS, 1922. 397

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Lyrae. Mag. 0.1		4 H. Scuti. Mag. 4.7		$\phi$ Sagittarii. Mag. 3.3	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 18 <sup>m</sup> 34	<sup>°</sup> 38 <sup>'</sup> 42	<sup>h</sup> 18 <sup>m</sup> 37	<sup>°</sup> 9 <sup>'</sup> 7	<sup>h</sup> 18 <sup>m</sup> 40	<sup>°</sup> 27 <sup>'</sup> 4
Jan. 1.0	16.371 <sup>103</sup>	45.31 <sup>313</sup>	59.160 <sup>135</sup>	33.90 <sup>82</sup>	45.768 <sup>150</sup>	11.82 <sup>31</sup>
11.0	16.474 <sup>157</sup>	42.18 <sup>307</sup>	59.295 <sup>171</sup>	34.72 <sup>81</sup>	45.918 <sup>190</sup>	11.51 <sup>28</sup>
20.9	16.631 <sup>199</sup>	39.11 <sup>284</sup>	59.466 <sup>201</sup>	35.53 <sup>75</sup>	46.108 <sup>224</sup>	11.23 <sup>27</sup>
30.9	16.830 <sup>236</sup>	36.27 <sup>254</sup>	59.667 <sup>226</sup>	36.28 <sup>65</sup>	46.332 <sup>252</sup>	10.96 <sup>26</sup>
Feb. 9.9	17.066 <sup>270</sup>	33.73 <sup>216</sup>	59.893 <sup>247</sup>	36.93 <sup>53</sup>	46.584 <sup>274</sup>	10.70 <sup>26</sup>
19.9	17.336 <sup>296</sup>	31.57 <sup>163</sup>	60.140 <sup>263</sup>	37.46 <sup>34</sup>	46.858 <sup>294</sup>	10.44 <sup>29</sup>
Mar. 1.8	17.632 <sup>315</sup>	29.94 <sup>109</sup>	60.403 <sup>276</sup>	37.80 <sup>15</sup>	47.152 <sup>306</sup>	10.15 <sup>31</sup>
11.8	17.947 <sup>328</sup>	28.85 <sup>50</sup>	60.679 <sup>283</sup>	37.95 <sup>7</sup>	47.458 <sup>315</sup>	9.84 <sup>34</sup>
21.8	18.275 <sup>332</sup>	28.35 <sup>7</sup>	60.962 <sup>288</sup>	37.88 <sup>28</sup>	47.773 <sup>321</sup>	9.50 <sup>37</sup>
31.7	18.607 <sup>331</sup>	28.42 <sup>70</sup>	61.250 <sup>289</sup>	37.60 <sup>49</sup>	48.094 <sup>321</sup>	9.13 <sup>38</sup>
Apr. 10.7	18.938 <sup>323</sup>	29.12 <sup>123</sup>	61.539 <sup>286</sup>	37.11 <sup>68</sup>	48.415 <sup>318</sup>	8.75 <sup>40</sup>
20.7	19.261 <sup>306</sup>	30.35 <sup>172</sup>	61.825 <sup>277</sup>	36.43 <sup>82</sup>	48.733 <sup>311</sup>	8.35 <sup>37</sup>
30.7	19.567 <sup>284</sup>	32.07 <sup>219</sup>	62.102 <sup>265</sup>	35.61 <sup>95</sup>	49.044 <sup>298</sup>	7.98 <sup>34</sup>
May 10.6	19.851 <sup>258</sup>	34.26 <sup>250</sup>	62.367 <sup>249</sup>	34.66 <sup>101</sup>	49.342 <sup>279</sup>	7.64 <sup>28</sup>
20.6	20.109 <sup>221</sup>	36.76 <sup>281</sup>	62.616 <sup>226</sup>	33.65 <sup>106</sup>	49.621 <sup>255</sup>	7.36 <sup>20</sup>
30.6	20.330 <sup>181</sup>	39.57 <sup>298</sup>	62.842 <sup>198</sup>	32.59 <sup>104</sup>	49.876 <sup>225</sup>	7.16 <sup>10</sup>
June 9.6	20.511 <sup>140</sup>	42.55 <sup>310</sup>	63.040 <sup>165</sup>	31.55 <sup>101</sup>	50.101 <sup>190</sup>	7.06 <sup>1</sup>
19.5	20.651 <sup>90</sup>	45.65 <sup>307</sup>	63.205 <sup>129</sup>	30.54 <sup>94</sup>	50.291 <sup>149</sup>	7.05 <sup>10</sup>
29.5	20.741 <sup>39</sup>	48.72 <sup>301</sup>	63.334 <sup>89</sup>	29.60 <sup>84</sup>	50.440 <sup>104</sup>	7.15 <sup>20</sup>
July 9.5	20.780 <sup>9</sup>	51.73 <sup>287</sup>	63.423 <sup>46</sup>	28.76 <sup>73</sup>	50.544 <sup>59</sup>	7.35 <sup>30</sup>
19.4	20.771 <sup>61</sup>	54.60 <sup>265</sup>	63.469 <sup>3</sup>	28.03 <sup>62</sup>	50.603 <sup>9</sup>	7.65 <sup>36</sup>
29.4	20.710 <sup>108</sup>	57.25 <sup>239</sup>	63.472 <sup>39</sup>	27.41 <sup>49</sup>	50.612 <sup>38</sup>	8.01 <sup>41</sup>
Aug. 8.4	20.602 <sup>151</sup>	59.64 <sup>206</sup>	63.433 <sup>79</sup>	26.92 <sup>38</sup>	50.574 <sup>83</sup>	8.42 <sup>43</sup>
18.4	20.451 <sup>195</sup>	61.70 <sup>170</sup>	63.354 <sup>115</sup>	26.54 <sup>26</sup>	50.491 <sup>123</sup>	8.85 <sup>42</sup>
28.3	20.256 <sup>223</sup>	63.40 <sup>129</sup>	63.239 <sup>146</sup>	26.28 <sup>15</sup>	50.368 <sup>157</sup>	9.27 <sup>39</sup>
Sept. 7.3	20.033 <sup>249</sup>	64.69 <sup>88</sup>	63.093 <sup>167</sup>	26.13 <sup>6</sup>	50.211 <sup>183</sup>	9.66 <sup>33</sup>
17.3	19.784 <sup>260</sup>	65.57 <sup>42</sup>	62.926 <sup>181</sup>	26.07 <sup>4</sup>	50.028 <sup>198</sup>	9.99 <sup>23</sup>
27.3	19.524 <sup>266</sup>	65.99 <sup>0</sup>	62.745 <sup>184</sup>	26.11 <sup>11</sup>	49.830 <sup>204</sup>	10.22 <sup>14</sup>
Oct. 7.2	19.258 <sup>260</sup>	65.99 <sup>51</sup>	62.561 <sup>179</sup>	26.22 <sup>20</sup>	49.626 <sup>196</sup>	10.36 <sup>3</sup>
17.2	18.998 <sup>242</sup>	65.48 <sup>98</sup>	62.382 <sup>160</sup>	26.42 <sup>28</sup>	49.430 <sup>178</sup>	10.39 <sup>7</sup>
27.2	18.756 <sup>215</sup>	64.50 <sup>142</sup>	62.222 <sup>136</sup>	26.70 <sup>37</sup>	49.252 <sup>150</sup>	10.32 <sup>16</sup>
Nov. 6.1	18.541 <sup>177</sup>	63.08 <sup>188</sup>	62.086 <sup>103</sup>	27.07 <sup>46</sup>	49.102 <sup>113</sup>	10.16 <sup>24</sup>
16.1	18.364 <sup>136</sup>	61.20 <sup>227</sup>	61.983 <sup>62</sup>	27.53 <sup>55</sup>	48.989 <sup>70</sup>	9.92 <sup>29</sup>
26.1	18.228 <sup>85</sup>	58.93 <sup>258</sup>	61.921 <sup>20</sup>	28.08 <sup>64</sup>	48.919 <sup>22</sup>	9.63 <sup>32</sup>
Dec. 6.1	18.143 <sup>33</sup>	56.35 <sup>288</sup>	61.901 <sup>24</sup>	28.72 <sup>73</sup>	48.897 <sup>28</sup>	9.31 <sup>33</sup>
16.0	18.110 <sup>17</sup>	53.47 <sup>306</sup>	61.925 <sup>69</sup>	29.45 <sup>79</sup>	48.925 <sup>77</sup>	8.98 <sup>32</sup>
26.0	18.127 <sup>75</sup>	50.41 <sup>317</sup>	61.994 <sup>111</sup>	30.24 <sup>84</sup>	49.002 <sup>123</sup>	8.66 <sup>30</sup>
36.0	18.202	47.24	62.105	31.08	49.125	8.36
Mean Place	17.852	36.92	60.250	42.20	47.006	20.15
Sec $\delta$ , Tan $\delta$	1.281	+0.801	1.013	-0.161	1.123	-0.511
L $\alpha$ , L $\delta$	-0.02	+0.1	0.00	+0.1	+0.01	+0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	-1.0	0.00	-1.0	+0.01	-1.0
AUTHORITY	A. E.					

# 398 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		λ Pavonis. Mag. 4.4		30 Sagittarii. Mag. 6.2		β Lyræ. Mag. 3.4-4.1	
		R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
		<sup>h</sup> 18 <sup>m</sup> 44	<sup>°</sup> 62 <sup>'</sup> 16	<sup>h</sup> 18 <sup>m</sup> 46	<sup>°</sup> 22 <sup>'</sup> 14	<sup>h</sup> 18 <sup>m</sup> 47	<sup>°</sup> 33 <sup>'</sup> 16
Jan.	1.0	56.97 <sup>s</sup> <sub>23</sub>	35.20 <sup>s</sup> <sub>235</sub>	7.916 <sup>s</sup> <sub>139</sub>	60.85 <sup>s</sup> <sub>2</sub>	10.657 <sup>s</sup> <sub>93</sub>	25.50 <sup>s</sup> <sub>296</sub>
	11.0	57.20 <sup>s</sup> <sub>30</sub>	32.85 <sup>s</sup> <sub>226</sub>	8.055 <sup>s</sup> <sub>177</sub>	60.83 <sup>s</sup> <sub>2</sub>	10.750 <sup>s</sup> <sub>139</sub>	22.54 <sup>s</sup> <sub>286</sub>
	20.9	57.50 <sup>s</sup> <sub>38</sub>	30.59 <sup>s</sup> <sub>209</sub>	8.232 <sup>s</sup> <sub>210</sub>	60.81 <sup>s</sup> <sub>2</sub>	10.889 <sup>s</sup> <sub>181</sub>	19.68 <sup>s</sup> <sub>271</sub>
	30.9	57.88 <sup>s</sup> <sub>44</sub>	28.50 <sup>s</sup> <sub>190</sub>	8.442 <sup>s</sup> <sub>238</sub>	60.79 <sup>s</sup> <sub>5</sub>	11.070 <sup>s</sup> <sub>215</sub>	16.97 <sup>s</sup> <sub>245</sub>
Feb.	9.9	58.32 <sup>s</sup> <sub>49</sub>	26.60 <sup>s</sup> <sub>167</sub>	8.680 <sup>s</sup> <sub>260</sub>	60.74 <sup>s</sup> <sub>9</sub>	11.285 <sup>s</sup> <sub>248</sub>	14.52 <sup>s</sup> <sub>205</sub>
	19.9	58.81 <sup>s</sup> <sub>52</sub>	24.93 <sup>s</sup> <sub>140</sub>	8.940 <sup>s</sup> <sub>278</sub>	60.65 <sup>s</sup> <sub>15</sub>	11.533 <sup>s</sup> <sub>274</sub>	12.47 <sup>s</sup> <sub>164</sub>
Mar.	1.8	59.33 <sup>s</sup> <sub>56</sub>	23.53 <sup>s</sup> <sub>112</sub>	9.218 <sup>s</sup> <sub>293</sub>	60.50 <sup>s</sup> <sub>22</sub>	11.807 <sup>s</sup> <sub>293</sub>	10.83 <sup>s</sup> <sub>110</sub>
	11.8	59.89 <sup>s</sup> <sub>58</sub>	22.41 <sup>s</sup> <sub>80</sub>	9.511 <sup>s</sup> <sub>301</sub>	60.28 <sup>s</sup> <sub>31</sub>	12.100 <sup>s</sup> <sub>306</sub>	9.73 <sup>s</sup> <sub>55</sub>
	21.8	60.47 <sup>s</sup> <sub>58</sub>	21.61 <sup>s</sup> <sub>50</sub>	9.812 <sup>s</sup> <sub>307</sub>	59.97 <sup>s</sup> <sub>39</sub>	12.406 <sup>s</sup> <sub>315</sub>	9.18 <sup>s</sup> <sub>2</sub>
	31.7	61.05 <sup>s</sup> <sub>59</sub>	21.11 <sup>s</sup> <sub>19</sub>	10.119 <sup>s</sup> <sub>310</sub>	59.58 <sup>s</sup> <sub>46</sub>	12.721 <sup>s</sup> <sub>315</sub>	9.20 <sup>s</sup> <sub>58</sub>
Apr.	10.7	61.64 <sup>s</sup> <sub>58</sub>	20.92 <sup>s</sup> <sub>14</sub>	10.429 <sup>s</sup> <sub>308</sub>	59.12 <sup>s</sup> <sub>51</sub>	13.036 <sup>s</sup> <sub>309</sub>	9.78 <sup>s</sup> <sub>111</sub>
	20.7	62.22 <sup>s</sup> <sub>56</sub>	21.06 <sup>s</sup> <sub>48</sub>	10.737 <sup>s</sup> <sub>301</sub>	58.61 <sup>s</sup> <sub>54</sub>	13.345 <sup>s</sup> <sub>300</sub>	10.89 <sup>s</sup> <sub>159</sub>
	30.7	62.78 <sup>s</sup> <sub>54</sub>	21.54 <sup>s</sup> <sub>79</sub>	11.038 <sup>s</sup> <sub>289</sub>	58.07 <sup>s</sup> <sub>54</sub>	13.645 <sup>s</sup> <sub>281</sub>	12.48 <sup>s</sup> <sub>202</sub>
May	10.6	63.32 <sup>s</sup> <sub>49</sub>	22.33 <sup>s</sup> <sub>106</sub>	11.327 <sup>s</sup> <sub>272</sub>	57.53 <sup>s</sup> <sub>51</sub>	13.926 <sup>s</sup> <sub>260</sub>	14.50 <sup>s</sup> <sub>236</sub>
	20.6	63.81 <sup>s</sup> <sub>45</sub>	23.39 <sup>s</sup> <sub>137</sub>	11.599 <sup>s</sup> <sub>250</sub>	57.02 <sup>s</sup> <sub>47</sub>	14.186 <sup>s</sup> <sub>226</sub>	16.86 <sup>s</sup> <sub>264</sub>
	30.6	64.26 <sup>s</sup> <sub>39</sub>	24.76 <sup>s</sup> <sub>160</sub>	11.849 <sup>s</sup> <sub>221</sub>	56.55 <sup>s</sup> <sub>39</sub>	14.412 <sup>s</sup> <sub>190</sub>	19.50 <sup>s</sup> <sub>283</sub>
June	9.6	64.65 <sup>s</sup> <sub>31</sub>	26.36 <sup>s</sup> <sub>182</sub>	12.070 <sup>s</sup> <sub>187</sub>	56.16 <sup>s</sup> <sub>30</sub>	14.602 <sup>s</sup> <sub>154</sub>	22.33 <sup>s</sup> <sub>290</sub>
	19.5	64.96 <sup>s</sup> <sub>25</sub>	28.18 <sup>s</sup> <sub>199</sub>	12.257 <sup>s</sup> <sub>149</sub>	55.86 <sup>s</sup> <sub>20</sub>	14.756 <sup>s</sup> <sub>109</sub>	25.23 <sup>s</sup> <sub>294</sub>
	29.5	65.21 <sup>s</sup> <sub>16</sub>	30.17 <sup>s</sup> <sub>210</sub>	12.406 <sup>s</sup> <sub>106</sub>	55.66 <sup>s</sup> <sub>10</sub>	14.865 <sup>s</sup> <sub>60</sub>	28.17 <sup>s</sup> <sub>288</sub>
July	9.5	65.37 <sup>s</sup> <sub>7</sub>	32.27 <sup>s</sup> <sub>213</sub>	12.512 <sup>s</sup> <sub>61</sub>	55.56 <sup>s</sup> <sub>1</sub>	14.925 <sup>s</sup> <sub>14</sub>	31.05 <sup>s</sup> <sub>275</sub>
	19.4	65.44 <sup>s</sup> <sub>2</sub>	34.40 <sup>s</sup> <sub>213</sub>	12.573 <sup>s</sup> <sub>14</sub>	55.57 <sup>s</sup> <sub>9</sub>	14.939 <sup>s</sup> <sub>34</sub>	33.80 <sup>s</sup> <sub>256</sub>
	29.4	65.42 <sup>s</sup> <sub>10</sub>	36.53 <sup>s</sup> <sub>204</sub>	12.587 <sup>s</sup> <sub>32</sub>	55.66 <sup>s</sup> <sub>17</sub>	14.905 <sup>s</sup> <sub>81</sub>	36.36 <sup>s</sup> <sub>232</sub>
Aug.	8.4	65.32 <sup>s</sup> <sub>19</sub>	38.57 <sup>s</sup> <sub>188</sub>	12.555 <sup>s</sup> <sub>76</sub>	55.83 <sup>s</sup> <sub>23</sub>	14.824 <sup>s</sup> <sub>125</sub>	38.68 <sup>s</sup> <sub>200</sub>
	18.4	65.13 <sup>s</sup> <sub>26</sub>	40.45 <sup>s</sup> <sub>164</sub>	12.479 <sup>s</sup> <sub>115</sub>	56.06 <sup>s</sup> <sub>25</sub>	14.699 <sup>s</sup> <sub>163</sub>	40.68 <sup>s</sup> <sub>168</sub>
	28.3	64.87 <sup>s</sup> <sub>32</sub>	42.09 <sup>s</sup> <sub>135</sub>	12.364 <sup>s</sup> <sub>149</sub>	56.31 <sup>s</sup> <sub>26</sub>	14.536 <sup>s</sup> <sub>198</sub>	42.36 <sup>s</sup> <sub>131</sub>
Sept.	7.3	64.55 <sup>s</sup> <sub>37</sub>	43.44 <sup>s</sup> <sub>98</sub>	12.215 <sup>s</sup> <sub>174</sub>	56.57 <sup>s</sup> <sub>25</sub>	14.338 <sup>s</sup> <sub>222</sub>	43.67 <sup>s</sup> <sub>93</sub>
	17.3	64.18 <sup>s</sup> <sub>40</sub>	44.42 <sup>s</sup> <sub>59</sub>	12.041 <sup>s</sup> <sub>189</sub>	56.82 <sup>s</sup> <sub>20</sub>	14.116 <sup>s</sup> <sub>236</sub>	44.60 <sup>s</sup> <sub>49</sub>
	27.3	63.78 <sup>s</sup> <sub>42</sub>	45.01 <sup>s</sup> <sub>16</sub>	11.852 <sup>s</sup> <sub>195</sub>	57.02 <sup>s</sup> <sub>16</sub>	13.880 <sup>s</sup> <sub>243</sub>	45.09 <sup>s</sup> <sub>8</sub>
Oct.	7.2	63.36 <sup>s</sup> <sub>40</sub>	45.17 <sup>s</sup> <sub>29</sub>	11.657 <sup>s</sup> <sub>190</sub>	57.18 <sup>s</sup> <sub>11</sub>	13.637 <sup>s</sup> <sub>238</sub>	45.17 <sup>s</sup> <sub>37</sub>
	17.2	62.96 <sup>s</sup> <sub>38</sub>	44.88 <sup>s</sup> <sub>74</sub>	11.467 <sup>s</sup> <sub>173</sub>	57.29 <sup>s</sup> <sub>5</sub>	13.399 <sup>s</sup> <sub>222</sub>	44.80 <sup>s</sup> <sub>83</sub>
	27.2	62.58 <sup>s</sup> <sub>33</sub>	44.14 <sup>s</sup> <sub>114</sub>	11.294 <sup>s</sup> <sub>147</sub>	57.34 <sup>s</sup> <sub>0</sub>	13.177 <sup>s</sup> <sub>199</sub>	43.97 <sup>s</sup> <sub>123</sub>
Nov.	6.1	62.25 <sup>s</sup> <sub>26</sub>	43.00 <sup>s</sup> <sub>150</sub>	11.147 <sup>s</sup> <sub>112</sub>	57.34 <sup>s</sup> <sub>3</sub>	12.978 <sup>s</sup> <sub>168</sub>	42.74 <sup>s</sup> <sub>167</sub>
	16.1	61.99 <sup>s</sup> <sub>19</sub>	41.50 <sup>s</sup> <sub>183</sub>	11.035 <sup>s</sup> <sub>71</sub>	57.31 <sup>s</sup> <sub>6</sub>	12.810 <sup>s</sup> <sub>130</sub>	41.07 <sup>s</sup> <sub>204</sub>
	26.1	61.80 <sup>s</sup> <sub>10</sub>	39.67 <sup>s</sup> <sub>207</sub>	10.964 <sup>s</sup> <sub>26</sub>	57.25 <sup>s</sup> <sub>5</sub>	12.680 <sup>s</sup> <sub>82</sub>	39.03 <sup>s</sup> <sub>237</sub>
Dec.	6.1	61.70 <sup>s</sup> <sub>1</sub>	37.60 <sup>s</sup> <sub>224</sub>	10.938 <sup>s</sup> <sub>21</sub>	57.20 <sup>s</sup> <sub>5</sub>	12.598 <sup>s</sup> <sub>34</sub>	36.66 <sup>s</sup> <sub>264</sub>
	16.0	61.69 <sup>s</sup> <sub>8</sub>	35.36 <sup>s</sup> <sub>234</sub>	10.959 <sup>s</sup> <sub>69</sub>	57.15 <sup>s</sup> <sub>3</sub>	12.564 <sup>s</sup> <sub>13</sub>	34.02 <sup>s</sup> <sub>284</sub>
	26.0	61.77 <sup>s</sup> <sub>18</sub>	33.02 <sup>s</sup> <sub>235</sub>	11.028 <sup>s</sup> <sub>113</sub>	57.12 <sup>s</sup> <sub>0</sub>	12.577 <sup>s</sup> <sub>66</sub>	31.18 <sup>s</sup> <sub>296</sub>
	36.0	61.95 <sup>s</sup>	30.67 <sup>s</sup>	11.141 <sup>s</sup>	57.12 <sup>s</sup>	12.643 <sup>s</sup>	28.22 <sup>s</sup>
Mean Place		59.61	43.70	9.102	68.97	11.993	16.54
Sec δ, Tan δ		2.149	-1.903	1.080	-0.409	1.196	+0.656
L α, L δ		+0.05	+0.1	+0.01	+0.1	-0.02	+0.1
ω α, ω δ		+0.02	-1.0	+0.01	-1.0	-0.01	-1.0
AUTHORITY		A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 399

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\sigma$ Sagittarii. Mag. 2·1		$\xi$ Sagittarii. Mag. 3·6		$\gamma$ Lyræ. Mag. 3·3	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 18 <sup>m</sup> 50	<sup>°</sup> 26 <sup>'</sup> 23	<sup>h</sup> 18 <sup>m</sup> 53	<sup>°</sup> 21 <sup>'</sup> 12	<sup>h</sup> 18 <sup>m</sup> 56	<sup>°</sup> 32 <sup>'</sup> 34
Jan. 1·0	24·472 <sup>s</sup> <sub>140</sub>	34·28 <sub>28</sub>	3·454 <sup>s</sup> <sub>131</sub>	29·82 <sub>2</sub>	0·213 <sup>s</sup> <sub>85</sub>	63·28 <sub>291</sub>
11·0	24·612 <sub>177</sub>	34·00 <sub>28</sub>	3·585 <sub>168</sub>	29·84 <sub>2</sub>	0·298 <sub>127</sub>	60·37 <sub>284</sub>
20·9	24·789 <sub>213</sub>	33·72 <sub>28</sub>	3·753 <sub>202</sub>	29·86 <sub>0</sub>	0·425 <sub>171</sub>	57·53 <sub>271</sub>
30·9	25·002 <sub>244</sub>	33·44 <sub>30</sub>	3·955 <sub>230</sub>	29·86 <sub>3</sub>	0·596 <sub>206</sub>	54·82 <sub>243</sub>
Feb. 9·9	25·246 <sub>263</sub>	33·14 <sub>29</sub>	4·185 <sub>253</sub>	29·83 <sub>8</sub>	0·802 <sub>239</sub>	52·39 <sub>208</sub>
19·9	25·509 <sub>287</sub>	32·85 <sub>34</sub>	4·438 <sub>272</sub>	29·75 <sub>16</sub>	1·041 <sub>266</sub>	50·31 <sub>166</sub>
Mar. 1·8	25·796 <sub>300</sub>	32·51 <sub>36</sub>	4·710 <sub>287</sub>	29·59 <sub>25</sub>	1·307 <sub>287</sub>	48·65 <sub>114</sub>
11·8	26·096 <sub>310</sub>	32·15 <sub>41</sub>	4·997 <sub>297</sub>	29·34 <sub>34</sub>	1·594 <sub>300</sub>	47·51 <sub>59</sub>
21·8	26·406 <sub>317</sub>	31·74 <sub>45</sub>	5·294 <sub>304</sub>	29·00 <sub>43</sub>	1·894 <sub>311</sub>	46·92 <sub>5</sub>
31·7	26·723 <sub>321</sub>	31·29 <sub>45</sub>	5·598 <sub>308</sub>	28·57 <sub>51</sub>	2·205 <sub>314</sub>	46·87 <sub>53</sub>
Apr. 10·7	27·044 <sub>319</sub>	30·84 <sub>49</sub>	5·906 <sub>306</sub>	28·06 <sub>57</sub>	2·519 <sub>311</sub>	47·40 <sub>104</sub>
20·7	27·363 <sub>312</sub>	30·35 <sub>44</sub>	6·212 <sub>301</sub>	27·49 <sub>61</sub>	2·830 <sub>302</sub>	48·44 <sub>154</sub>
30·7	27·675 <sub>303</sub>	29·91 <sub>45</sub>	6·513 <sub>291</sub>	26·88 <sub>62</sub>	3·132 <sub>285</sub>	49·98 <sub>197</sub>
May 10·6	27·978 <sub>282</sub>	29·46 <sub>34</sub>	6·804 <sub>274</sub>	26·26 <sub>60</sub>	3·417 <sub>265</sub>	51·95 <sub>233</sub>
20·6	28·260 <sub>262</sub>	29·12 <sub>31</sub>	7·078 <sub>253</sub>	25·66 <sub>55</sub>	3·682 <sub>233</sub>	54·28 <sub>258</sub>
30·6	28·522 <sub>230</sub>	28·81 <sub>19</sub>	7·331 <sub>225</sub>	25·11 <sub>48</sub>	3·915 <sub>200</sub>	56·86 <sub>280</sub>
June 9·6	28·752 <sub>197</sub>	28·62 <sub>10</sub>	7·556 <sub>192</sub>	24·63 <sub>39</sub>	4·115 <sub>163</sub>	59·66 <sub>289</sub>
19·5	28·949 <sub>156</sub>	28·52 <sub>4</sub>	7·748 <sub>155</sub>	24·24 <sub>29</sub>	4·278 <sub>118</sub>	62·55 <sub>293</sub>
29·5	29·105 <sub>114</sub>	28·56 <sub>14</sub>	7·903 <sub>112</sub>	23·95 <sub>17</sub>	4·396 <sub>70</sub>	65·48 <sub>289</sub>
July 9·5	29·219 <sub>65</sub>	28·70 <sub>23</sub>	8·015 <sub>67</sub>	23·78 <sub>7</sub>	4·466 <sub>27</sub>	68·37 <sub>276</sub>
19·4	29·284 <sub>20</sub>	28·93 <sub>32</sub>	8·082 <sub>20</sub>	23·71 <sub>3</sub>	4·493 <sub>25</sub>	71·13 <sub>258</sub>
29·4	29·304 <sub>31</sub>	29·25 <sub>40</sub>	8·102 <sub>25</sub>	23·74 <sub>12</sub>	4·468 <sub>71</sub>	73·71 <sub>235</sub>
Aug. 8·4	29·273 <sub>74</sub>	29·65 <sub>42</sub>	8·077 <sub>70</sub>	23·86 <sub>19</sub>	4·397 <sub>116</sub>	76·06 <sub>206</sub>
18·4	29·199 <sub>116</sub>	30·07 <sub>43</sub>	8·007 <sub>109</sub>	24·05 <sub>23</sub>	4·281 <sub>155</sub>	78·12 <sub>172</sub>
28·3	29·083 <sub>148</sub>	30·50 <sub>39</sub>	7·898 <sub>144</sub>	24·28 <sub>25</sub>	4·126 <sub>190</sub>	79·84 <sub>138</sub>
Sept. 7·3	28·935 <sub>178</sub>	30·89 <sub>34</sub>	7·754 <sub>169</sub>	24·53 <sub>24</sub>	3·936 <sub>215</sub>	81·22 <sub>98</sub>
17·3	28·757 <sub>195</sub>	31·23 <sub>29</sub>	7·585 <sub>187</sub>	24·77 <sub>22</sub>	3·721 <sub>228</sub>	82·20 <sub>57</sub>
27·3	28·562 <sub>201</sub>	31·52 <sub>20</sub>	7·398 <sub>193</sub>	24·99 <sub>19</sub>	3·493 <sub>239</sub>	82·77 <sub>16</sub>
Oct. 7·2	28·361 <sub>195</sub>	31·72 <sub>10</sub>	7·205 <sub>188</sub>	25·18 <sub>14</sub>	3·254 <sub>241</sub>	82·93 <sub>28</sub>
17·2	28·166 <sub>179</sub>	31·82 <sub>3</sub>	7·017 <sub>174</sub>	25·32 <sub>10</sub>	3·013 <sub>221</sub>	82·65 <sub>74</sub>
27·2	27·987 <sub>154</sub>	31·79 <sub>7</sub>	6·843 <sub>149</sub>	25·42 <sub>5</sub>	2·792 <sub>201</sub>	81·91 <sub>114</sub>
Nov. 6·1	27·833 <sub>122</sub>	31·72 <sub>18</sub>	6·694 <sub>115</sub>	25·47 <sub>2</sub>	2·591 <sub>169</sub>	80·77 <sub>158</sub>
16·1	27·711 <sub>75</sub>	31·54 <sub>23</sub>	6·579 <sub>76</sub>	25·49 <sub>1</sub>	2·422 <sub>133</sub>	79·19 <sub>197</sub>
26·1	27·636 <sub>32</sub>	31·31 <sub>26</sub>	6·503 <sub>32</sub>	25·50 <sub>0</sub>	2·289 <sub>88</sub>	77·22 <sub>229</sub>
Dec. 6·1	27·604 <sub>18</sub>	31·05 <sub>28</sub>	6·471 <sub>15</sub>	25·50 <sub>1</sub>	2·201 <sub>43</sub>	74·93 <sub>257</sub>
16·0	27·622 <sub>66</sub>	30·77 <sub>29</sub>	6·486 <sub>61</sub>	25·51 <sub>3</sub>	2·158 <sub>6</sub>	72·36 <sub>278</sub>
26·0	27·688 <sub>112</sub>	30·48 <sub>29</sub>	6·547 <sub>105</sub>	25·54 <sub>4</sub>	2·164 <sub>56</sub>	69·58 <sub>289</sub>
36·0	27·800	30·19	6·652	25·58	2·220	66·69
Mean Place	25·713	42·22	4·632	37·72	1·515	53·93
Sec $\delta$ , Tan $\delta$	1·116	—0·496	1·073	—0·388	1·187	+0·639
L $\alpha$ , L $\delta$	+0·01	+0·1	+0·01	+0·1	—0·02	+0·1
$\omega$ $\alpha$ , $\omega$ $\delta$	+0·01	—1·0	+0·01	—1·0	—0·01	—1·0
AUTHORITY	A. E.		A. N.		A. E.	

# 400 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Aquilæ. Mag. 4.2		ζ Sagittarii. Mag. 2.7		ζ Aquilæ. Mag. 3.0	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 18 <sup>m</sup> 56	<sup>°</sup> 14 <sup>'</sup> 57	<sup>h</sup> 18 <sup>m</sup> 57	<sup>°</sup> 29 <sup>'</sup> 59	<sup>h</sup> 19 <sup>m</sup> 1	<sup>°</sup> 13 <sup>'</sup> 44
Jan. 1.0	3.800 <sup>100</sup>	49.34 <sup>213</sup>	37.686 <sup>134</sup>	26.77 <sup>55</sup>	48.386 <sup>95</sup>	56.07 <sup>205</sup>
11.0	3.900 <sup>136</sup>	47.21 <sup>208</sup>	37.820 <sup>176</sup>	26.22 <sup>54</sup>	48.481 <sup>130</sup>	54.02 <sup>202</sup>
21.0	4.036 <sup>170</sup>	45.13 <sup>197</sup>	37.996 <sup>212</sup>	25.68 <sup>53</sup>	48.611 <sup>165</sup>	52.00 <sup>190</sup>
30.9	4.206 <sup>200</sup>	43.16 <sup>176</sup>	38.208 <sup>243</sup>	25.15 <sup>52</sup>	48.776 <sup>197</sup>	50.10 <sup>171</sup>
Feb. 9.9	4.406 <sup>224</sup>	41.40 <sup>148</sup>	38.451 <sup>269</sup>	24.63 <sup>51</sup>	48.973 <sup>220</sup>	48.39 <sup>145</sup>
19.9	4.630 <sup>246</sup>	39.92 <sup>114</sup>	38.720 <sup>289</sup>	24.12 <sup>52</sup>	49.193 <sup>242</sup>	46.94 <sup>110</sup>
Mar. 1.9	4.876 <sup>262</sup>	38.78 <sup>74</sup>	39.009 <sup>305</sup>	23.60 <sup>52</sup>	49.435 <sup>259</sup>	45.84 <sup>71</sup>
11.8	5.138 <sup>274</sup>	38.04 <sup>32</sup>	39.314 <sup>318</sup>	23.08 <sup>53</sup>	49.694 <sup>274</sup>	45.13 <sup>30</sup>
21.8	5.412 <sup>283</sup>	37.72 <sup>13</sup>	39.632 <sup>326</sup>	22.55 <sup>53</sup>	49.968 <sup>281</sup>	44.83 <sup>12</sup>
31.8	5.695 <sup>285</sup>	37.85 <sup>55</sup>	39.958 <sup>330</sup>	22.02 <sup>51</sup>	50.249 <sup>285</sup>	44.95 <sup>54</sup>
Apr. 10.7	5.980 <sup>284</sup>	38.40 <sup>96</sup>	40.288 <sup>330</sup>	21.51 <sup>49</sup>	50.534 <sup>285</sup>	45.49 <sup>94</sup>
20.7	6.264 <sup>279</sup>	39.36 <sup>133</sup>	40.618 <sup>324</sup>	21.02 <sup>44</sup>	50.819 <sup>280</sup>	46.43 <sup>129</sup>
30.7	6.543 <sup>266</sup>	40.69 <sup>164</sup>	40.942 <sup>314</sup>	20.58 <sup>37</sup>	51.099 <sup>268</sup>	47.72 <sup>159</sup>
May 10.7	6.809 <sup>249</sup>	42.33 <sup>190</sup>	41.256 <sup>297</sup>	20.21 <sup>28</sup>	51.367 <sup>252</sup>	49.31 <sup>186</sup>
20.6	7.058 <sup>226</sup>	44.23 <sup>207</sup>	41.553 <sup>274</sup>	19.93 <sup>18</sup>	51.619 <sup>232</sup>	51.17 <sup>204</sup>
30.6	7.284 <sup>199</sup>	46.30 <sup>220</sup>	41.827 <sup>245</sup>	19.75 <sup>5</sup>	51.851 <sup>201</sup>	53.21 <sup>217</sup>
June 9.6	7.483 <sup>165</sup>	48.50 <sup>225</sup>	42.072 <sup>210</sup>	19.70 <sup>8</sup>	52.052 <sup>170</sup>	55.38 <sup>220</sup>
19.6	7.648 <sup>128</sup>	50.75 <sup>223</sup>	42.282 <sup>170</sup>	19.78 <sup>21</sup>	52.222 <sup>135</sup>	57.58 <sup>219</sup>
29.5	7.776 <sup>87</sup>	52.98 <sup>216</sup>	42.452 <sup>124</sup>	19.99 <sup>33</sup>	52.357 <sup>93</sup>	59.77 <sup>212</sup>
July 9.5	7.863 <sup>45</sup>	55.14 <sup>205</sup>	42.576 <sup>77</sup>	20.32 <sup>43</sup>	52.450 <sup>51</sup>	61.89 <sup>199</sup>
19.5	7.908 <sup>1</sup>	57.19 <sup>187</sup>	42.653 <sup>26</sup>	20.75 <sup>53</sup>	52.501 <sup>6</sup>	63.88 <sup>185</sup>
29.4	7.909 <sup>42</sup>	59.06 <sup>167</sup>	42.679 <sup>23</sup>	21.28 <sup>58</sup>	52.507 <sup>36</sup>	65.73 <sup>165</sup>
Aug. 8.4	7.867 <sup>83</sup>	60.73 <sup>144</sup>	42.656 <sup>72</sup>	21.86 <sup>60</sup>	52.471 <sup>78</sup>	67.38 <sup>141</sup>
18.4	7.784 <sup>120</sup>	62.17 <sup>118</sup>	42.584 <sup>114</sup>	22.46 <sup>60</sup>	52.393 <sup>113</sup>	68.79 <sup>117</sup>
28.4	7.664 <sup>150</sup>	63.35 <sup>91</sup>	42.470 <sup>152</sup>	23.06 <sup>55</sup>	52.280 <sup>145</sup>	69.96 <sup>91</sup>
Sept. 7.3	7.514 <sup>175</sup>	64.26 <sup>62</sup>	42.318 <sup>181</sup>	23.61 <sup>48</sup>	52.135 <sup>170</sup>	70.87 <sup>61</sup>
17.3	7.339 <sup>191</sup>	64.88 <sup>32</sup>	42.137 <sup>200</sup>	24.09 <sup>37</sup>	51.965 <sup>188</sup>	71.48 <sup>34</sup>
27.3	7.148 <sup>197</sup>	65.20 <sup>2</sup>	41.937 <sup>208</sup>	24.46 <sup>24</sup>	51.777 <sup>194</sup>	71.82 <sup>3</sup>
Oct. 7.3	6.951 <sup>193</sup>	65.22 <sup>29</sup>	41.729 <sup>204</sup>	24.70 <sup>11</sup>	51.583 <sup>191</sup>	71.85 <sup>26</sup>
17.2	6.758 <sup>181</sup>	64.93 <sup>60</sup>	41.525 <sup>189</sup>	24.81 <sup>3</sup>	51.392 <sup>180</sup>	71.59 <sup>53</sup>
27.2	6.577 <sup>159</sup>	64.33 <sup>90</sup>	41.336 <sup>163</sup>	24.78 <sup>17</sup>	51.212 <sup>160</sup>	71.06 <sup>87</sup>
Nov. 6.2	6.418 <sup>130</sup>	63.43 <sup>119</sup>	41.173 <sup>129</sup>	24.61 <sup>28</sup>	51.052 <sup>131</sup>	70.19 <sup>115</sup>
16.1	6.288 <sup>95</sup>	62.24 <sup>147</sup>	41.044 <sup>87</sup>	24.33 <sup>38</sup>	50.921 <sup>94</sup>	69.04 <sup>140</sup>
26.1	6.193 <sup>54</sup>	60.77 <sup>170</sup>	40.957 <sup>39</sup>	23.95 <sup>46</sup>	50.827 <sup>59</sup>	67.64 <sup>162</sup>
Dec. 6.1	6.139 <sup>11</sup>	59.07 <sup>192</sup>	40.918 <sup>10</sup>	23.49 <sup>49</sup>	50.768 <sup>14</sup>	66.02 <sup>184</sup>
16.1	6.128 <sup>31</sup>	57.15 <sup>206</sup>	40.928 <sup>59</sup>	23.00 <sup>52</sup>	50.754 <sup>26</sup>	64.18 <sup>199</sup>
26.0	6.159 <sup>73</sup>	55.09 <sup>214</sup>	40.987 <sup>107</sup>	22.48 <sup>52</sup>	50.780 <sup>69</sup>	62.19 <sup>207</sup>
36.0	6.232	52.95	41.094	21.96	50.849	60.12
Mean Place	4.907	40.60	38.984	34.36	49.482	47.29
Sec δ, Tan δ	1.035	+0.267	1.155	-0.577	1.030	+0.245
L α, L δ	-0.01	+0.1	+0.01	+0.1	-0.01	+0.1
ω α, ω δ	0.00	-1.0	+0.01	-1.0	0.00	-1.0
AUTHORITY	A. N.		A. N.		A. E.	

APPARENT PLACES OF STARS, 1922. 401

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\tau$ Sagittarii. Mag. 3.4		$\lambda$ Aquilæ. Mag. 3.6		$\alpha$ Coronæ Aust. Mag. 4.1			
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.		
	<sup>h</sup> 19	<sup>m</sup> 2	<sup>°</sup> 27	<sup>'</sup> 46	<sup>h</sup> 19	<sup>m</sup> 4	<sup>°</sup> 38	<sup>'</sup> 1
Jan. 1.0	3.035 <sup>128</sup>	61.25 <sup>42</sup>	5.490 <sup>107</sup>	53.78 <sup>100</sup>	8.495 <sup>137</sup>	32.19 <sup>106</sup>		
11.0	3.163 <sup>168</sup>	60.83 <sup>42</sup>	5.597 <sup>145</sup>	54.78 <sup>98</sup>	8.632 <sup>183</sup>	31.13 <sup>105</sup>		
21.0	3.331 <sup>203</sup>	60.41 <sup>42</sup>	5.742 <sup>174</sup>	55.76 <sup>91</sup>	8.815 <sup>223</sup>	30.08 <sup>102</sup>		
30.9	3.534 <sup>234</sup>	59.99 <sup>42</sup>	5.916 <sup>204</sup>	56.67 <sup>79</sup>	9.038 <sup>257</sup>	29.06 <sup>98</sup>		
Feb. 9.9	3.768 <sup>259</sup>	59.57 <sup>44</sup>	6.120 <sup>226</sup>	57.46 <sup>60</sup>	9.295 <sup>287</sup>	28.08 <sup>93</sup>		
19.9	4.027 <sup>281</sup>	59.13 <sup>46</sup>	6.346 <sup>245</sup>	58.06 <sup>43</sup>	9.582 <sup>311</sup>	27.15 <sup>87</sup>		
Mar. 1.9	4.308 <sup>297</sup>	58.67 <sup>49</sup>	6.591 <sup>261</sup>	58.49 <sup>19</sup>	9.893 <sup>333</sup>	26.28 <sup>80</sup>		
11.8	4.605 <sup>309</sup>	58.18 <sup>52</sup>	6.852 <sup>273</sup>	58.68 <sup>8</sup>	10.226 <sup>345</sup>	25.48 <sup>73</sup>		
21.8	4.914 <sup>319</sup>	57.66 <sup>54</sup>	7.125 <sup>281</sup>	58.60 <sup>32</sup>	10.571 <sup>355</sup>	24.75 <sup>65</sup>		
31.8	5.233 <sup>324</sup>	57.12 <sup>55</sup>	7.406 <sup>286</sup>	58.28 <sup>58</sup>	10.926 <sup>361</sup>	24.10 <sup>56</sup>		
Apr. 10.7	5.557 <sup>324</sup>	56.57 <sup>55</sup>	7.692 <sup>287</sup>	57.70 <sup>80</sup>	11.287 <sup>362</sup>	23.54 <sup>43</sup>		
20.7	5.881 <sup>319</sup>	56.02 <sup>52</sup>	7.979 <sup>282</sup>	56.90 <sup>100</sup>	11.649 <sup>356</sup>	23.11 <sup>32</sup>		
30.7	6.200 <sup>310</sup>	55.50 <sup>48</sup>	8.261 <sup>273</sup>	55.90 <sup>113</sup>	12.005 <sup>346</sup>	22.79 <sup>18</sup>		
May 10.7	6.510 <sup>294</sup>	55.02 <sup>39</sup>	8.534 <sup>259</sup>	54.77 <sup>125</sup>	12.351 <sup>326</sup>	22.61 <sup>1</sup>		
20.6	6.804 <sup>272</sup>	54.63 <sup>30</sup>	8.793 <sup>239</sup>	53.52 <sup>133</sup>	12.677 <sup>304</sup>	22.60 <sup>14</sup>		
30.6	7.076 <sup>244</sup>	54.33 <sup>18</sup>	9.032 <sup>213</sup>	52.19 <sup>132</sup>	12.981 <sup>272</sup>	22.74 <sup>33</sup>		
June 9.6	7.320 <sup>210</sup>	54.15 <sup>6</sup>	9.245 <sup>182</sup>	50.87 <sup>131</sup>	13.253 <sup>235</sup>	23.07 <sup>49</sup>		
19.6	7.530 <sup>171</sup>	54.09 <sup>7</sup>	9.427 <sup>146</sup>	49.56 <sup>123</sup>	13.488 <sup>188</sup>	23.56 <sup>63</sup>		
29.5	7.701 <sup>127</sup>	54.16 <sup>19</sup>	9.573 <sup>108</sup>	48.33 <sup>116</sup>	13.676 <sup>142</sup>	24.19 <sup>79</sup>		
July 9.5	7.828 <sup>80</sup>	54.35 <sup>31</sup>	9.681 <sup>65</sup>	47.17 <sup>102</sup>	13.818 <sup>89</sup>	24.98 <sup>89</sup>		
19.5	7.908 <sup>30</sup>	54.66 <sup>41</sup>	9.746 <sup>23</sup>	46.15 <sup>88</sup>	13.907 <sup>33</sup>	25.87 <sup>97</sup>		
29.4	7.938 <sup>19</sup>	55.07 <sup>47</sup>	9.769 <sup>21</sup>	45.27 <sup>73</sup>	13.940 <sup>21</sup>	26.84 <sup>100</sup>		
Aug. 8.4	7.919 <sup>65</sup>	55.54 <sup>52</sup>	9.748 <sup>64</sup>	44.54 <sup>58</sup>	13.919 <sup>76</sup>	27.84 <sup>101</sup>		
18.4	7.854 <sup>109</sup>	56.06 <sup>53</sup>	9.684 <sup>100</sup>	43.96 <sup>43</sup>	13.843 <sup>120</sup>	28.85 <sup>94</sup>		
28.4	7.745 <sup>146</sup>	56.59 <sup>50</sup>	9.584 <sup>134</sup>	43.53 <sup>29</sup>	13.723 <sup>164</sup>	29.79 <sup>84</sup>		
Sept. 7.3	7.599 <sup>175</sup>	57.09 <sup>45</sup>	9.450 <sup>156</sup>	43.24 <sup>14</sup>	13.559 <sup>197</sup>	30.63 <sup>71</sup>		
17.3	7.424 <sup>194</sup>	57.54 <sup>38</sup>	9.294 <sup>175</sup>	43.10 <sup>2</sup>	13.362 <sup>219</sup>	31.34 <sup>53</sup>		
27.3	7.230 <sup>203</sup>	57.92 <sup>26</sup>	9.119 <sup>182</sup>	43.08 <sup>12</sup>	13.143 <sup>230</sup>	31.87 <sup>33</sup>		
Oct. 7.3	7.027 <sup>200</sup>	58.18 <sup>16</sup>	8.937 <sup>178</sup>	43.20 <sup>21</sup>	12.913 <sup>225</sup>	32.20 <sup>10</sup>		
17.2	6.827 <sup>187</sup>	58.34 <sup>3</sup>	8.759 <sup>168</sup>	43.41 <sup>37</sup>	12.688 <sup>213</sup>	32.30 <sup>12</sup>		
27.2	6.640 <sup>161</sup>	58.37 <sup>8</sup>	8.591 <sup>145</sup>	43.78 <sup>47</sup>	12.475 <sup>186</sup>	32.18 <sup>33</sup>		
Nov. 6.2	6.479 <sup>129</sup>	58.29 <sup>17</sup>	8.446 <sup>117</sup>	44.25 <sup>61</sup>	12.289 <sup>150</sup>	31.85 <sup>52</sup>		
16.1	6.350 <sup>88</sup>	58.12 <sup>26</sup>	8.329 <sup>81</sup>	44.86 <sup>71</sup>	12.139 <sup>104</sup>	31.33 <sup>71</sup>		
26.1	6.262 <sup>41</sup>	57.86 <sup>32</sup>	8.248 <sup>42</sup>	45.57 <sup>82</sup>	12.035 <sup>54</sup>	30.62 <sup>84</sup>		
Dec. 6.1	6.221 <sup>5</sup>	57.54 <sup>37</sup>	8.206 <sup>1</sup>	46.39 <sup>91</sup>	11.981 <sup>2</sup>	29.78 <sup>93</sup>		
16.1	6.226 <sup>55</sup>	57.17 <sup>38</sup>	8.207 <sup>45</sup>	47.30 <sup>98</sup>	11.979 <sup>55</sup>	28.85 <sup>101</sup>		
26.0	6.281 <sup>100</sup>	56.79 <sup>39</sup>	8.252 <sup>83</sup>	48.28 <sup>102</sup>	12.034 <sup>106</sup>	27.84 <sup>103</sup>		
36.0	6.381	56.40	8.335	49.30	12.140	26.81		
Mean Place	4.306	68.67	6.568	61.84	9.970	39.30		
Sec $\delta$ , Tan $\delta$	1.130	-0.527	1.004	-0.087	1.269	-0.782		
L $\alpha$ , L $\delta$	+0.01	+0.1	0.00	+0.1	+0.02	+0.1		
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.01	-1.0	0.00	-1.0	+0.01	-1.0		
AUTHORITY			. A. E.		A. E.			

## 402 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\pi$ Sagittarii. Mag. 3.0		$\psi$ Sagittarii. Mag. 4.9		$\delta$ Draconis. Mag. 3.2	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	h m 19 5	° ' 21 8	h m 19 10	° ' 25 23	h m 19 12	° ' 67 31
Jan. 1.0	6.370 <sup>117</sup>	48.29 <sup>1</sup>	44.287 <sup>116</sup>	25.63 <sup>30</sup>	29.48 <sup>2</sup>	39.39 <sup>349</sup>
11.0	6.487 <sup>157</sup>	48.28 <sup>2</sup>	44.403 <sup>156</sup>	25.33 <sup>31</sup>	29.46 <sup>9</sup>	35.90 <sup>353</sup>
21.0	6.644 <sup>191</sup>	48.26 <sup>5</sup>	44.559 <sup>190</sup>	25.02 <sup>32</sup>	29.55 <sup>20</sup>	32.37 <sup>341</sup>
30.9	6.835 <sup>219</sup>	48.21 <sup>9</sup>	44.749 <sup>222</sup>	24.70 <sup>36</sup>	29.75 <sup>30</sup>	28.96 <sup>316</sup>
Feb. 9.9	7.054 <sup>243</sup>	48.12 <sup>14</sup>	44.971 <sup>246</sup>	24.34 <sup>38</sup>	30.05 <sup>38</sup>	25.80 <sup>281</sup>
19.9	7.297 <sup>262</sup>	47.98 <sup>23</sup>	45.217 <sup>269</sup>	23.96 <sup>44</sup>	30.43 <sup>46</sup>	22.99 <sup>232</sup>
Mar. 1.9	7.559 <sup>282</sup>	47.75 <sup>33</sup>	45.486 <sup>287</sup>	23.52 <sup>49</sup>	30.89 <sup>53</sup>	20.67 <sup>178</sup>
11.8	7.841 <sup>293</sup>	47.42 <sup>42</sup>	45.773 <sup>300</sup>	23.03 <sup>54</sup>	31.42 <sup>57</sup>	18.89 <sup>116</sup>
21.8	8.134 <sup>302</sup>	47.00 <sup>51</sup>	46.073 <sup>310</sup>	22.49 <sup>60</sup>	31.99 <sup>60</sup>	17.73 <sup>52</sup>
31.8	8.436 <sup>307</sup>	46.49 <sup>60</sup>	46.383 <sup>316</sup>	21.89 <sup>63</sup>	32.59 <sup>62</sup>	17.21 <sup>15</sup>
Apr. 10.7	8.743 <sup>308</sup>	45.89 <sup>65</sup>	46.699 <sup>319</sup>	21.26 <sup>65</sup>	33.21 <sup>60</sup>	17.36 <sup>80</sup>
20.7	9.051 <sup>306</sup>	45.24 <sup>68</sup>	47.018 <sup>318</sup>	20.61 <sup>65</sup>	33.81 <sup>57</sup>	18.16 <sup>138</sup>
30.7	9.357 <sup>295</sup>	44.56 <sup>70</sup>	47.336 <sup>305</sup>	19.96 <sup>61</sup>	34.38 <sup>54</sup>	19.54 <sup>198</sup>
May 10.7	9.652 <sup>282</sup>	43.86 <sup>69</sup>	47.641 <sup>293</sup>	19.35 <sup>55</sup>	34.92 <sup>48</sup>	21.52 <sup>244</sup>
20.6	9.934 <sup>262</sup>	43.17 <sup>60</sup>	47.934 <sup>273</sup>	18.80 <sup>47</sup>	35.40 <sup>41</sup>	23.96 <sup>283</sup>
30.6	10.196 <sup>234</sup>	42.57 <sup>54</sup>	48.207 <sup>248</sup>	18.33 <sup>36</sup>	35.81 <sup>33</sup>	26.79 <sup>314</sup>
June 9.6	10.430 <sup>202</sup>	42.03 <sup>44</sup>	48.455 <sup>213</sup>	17.97 <sup>25</sup>	36.14 <sup>23</sup>	29.93 <sup>337</sup>
19.6	10.632 <sup>166</sup>	41.59 <sup>34</sup>	48.668 <sup>176</sup>	17.72 <sup>10</sup>	36.37 <sup>15</sup>	33.30 <sup>348</sup>
29.5	10.798 <sup>123</sup>	41.25 <sup>22</sup>	48.844 <sup>134</sup>	17.62 <sup>2</sup>	36.52 <sup>4</sup>	36.78 <sup>352</sup>
July 9.5	10.921 <sup>78</sup>	41.03 <sup>10</sup>	48.978 <sup>87</sup>	17.64 <sup>14</sup>	36.56 <sup>6</sup>	40.30 <sup>346</sup>
19.5	10.999 <sup>32</sup>	40.93 <sup>3</sup>	49.065 <sup>38</sup>	17.78 <sup>26</sup>	36.50 <sup>15</sup>	43.76 <sup>331</sup>
29.5	11.031 <sup>14</sup>	40.96 <sup>12</sup>	49.103 <sup>10</sup>	18.04 <sup>35</sup>	36.35 <sup>25</sup>	47.07 <sup>310</sup>
Aug. 8.4	11.017 <sup>60</sup>	41.08 <sup>19</sup>	49.093 <sup>56</sup>	18.39 <sup>41</sup>	36.10 <sup>34</sup>	50.17 <sup>283</sup>
18.4	10.957 <sup>101</sup>	41.27 <sup>24</sup>	49.037 <sup>100</sup>	18.80 <sup>44</sup>	35.76 <sup>41</sup>	53.00 <sup>248</sup>
28.4	10.856 <sup>137</sup>	41.51 <sup>28</sup>	48.937 <sup>137</sup>	19.24 <sup>45</sup>	35.35 <sup>48</sup>	55.48 <sup>208</sup>
Sept. 7.3	10.719 <sup>162</sup>	41.79 <sup>29</sup>	48.800 <sup>167</sup>	19.69 <sup>42</sup>	34.87 <sup>53</sup>	57.56 <sup>164</sup>
17.3	10.557 <sup>184</sup>	42.08 <sup>26</sup>	48.633 <sup>186</sup>	20.11 <sup>37</sup>	34.34 <sup>58</sup>	59.20 <sup>115</sup>
27.3	10.373 <sup>191</sup>	42.34 <sup>24</sup>	48.447 <sup>197</sup>	20.48 <sup>30</sup>	33.76 <sup>59</sup>	60.35 <sup>64</sup>
Oct. 7.3	10.182 <sup>189</sup>	42.58 <sup>19</sup>	48.250 <sup>196</sup>	20.78 <sup>20</sup>	33.17 <sup>61</sup>	60.99 <sup>11</sup>
17.2	9.993 <sup>176</sup>	42.77 <sup>14</sup>	48.054 <sup>184</sup>	20.98 <sup>11</sup>	32.56 <sup>59</sup>	61.10 <sup>45</sup>
27.2	9.817 <sup>154</sup>	42.91 <sup>10</sup>	47.870 <sup>161</sup>	21.09 <sup>2</sup>	31.97 <sup>56</sup>	60.65 <sup>102</sup>
Nov. 6.2	9.663 <sup>125</sup>	43.01 <sup>6</sup>	47.709 <sup>131</sup>	21.11 <sup>7</sup>	31.41 <sup>52</sup>	59.63 <sup>153</sup>
16.2	9.538 <sup>83</sup>	43.07 <sup>3</sup>	47.578 <sup>91</sup>	21.04 <sup>14</sup>	30.89 <sup>45</sup>	58.10 <sup>207</sup>
26.1	9.455 <sup>43</sup>	43.10 <sup>3</sup>	47.487 <sup>49</sup>	20.90 <sup>19</sup>	30.44 <sup>38</sup>	56.03 <sup>253</sup>
Dec. 6.1	9.412 <sup>3</sup>	43.13 <sup>0</sup>	47.438 <sup>2</sup>	20.71 <sup>22</sup>	30.06 <sup>29</sup>	53.50 <sup>292</sup>
16.1	9.415 <sup>50</sup>	43.13 <sup>1</sup>	47.436 <sup>45</sup>	20.49 <sup>26</sup>	29.77 <sup>19</sup>	50.58 <sup>324</sup>
26.0	9.465 <sup>92</sup>	43.14 <sup>2</sup>	47.481 <sup>90</sup>	20.23 <sup>29</sup>	29.58 <sup>9</sup>	47.34 <sup>346</sup>
36.0	9.557	43.16	47.571	19.94	29.49	43.88
Mean Place	7.556	55.76	45.528	32.74	32.52	27.48
Sec $\delta$ , Tan $\delta$	1.072	-0.387	1.107	-0.475	2.615	+2.417
L $\alpha$ , L $\delta$	+0.01	+0.1	+0.01	+0.1	-0.06	+0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.01	-1.0	+0.01	-1.0	-0.05	-1.0
AUTHORITY	A. E.				A. E.	



# APPARENT PLACES OF STARS, 1922. 403

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\omega$ Aquilæ. Mag. 5.1		59 G. Telescopii. Mag. 5.6		$\delta$ Aquilæ. Mag. 3.4	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 19 <sup>m</sup> 14	<sup>°</sup> 11 <sup>'</sup> 27	<sup>h</sup> 19 <sup>m</sup> 21	<sup>°</sup> 54 <sup>'</sup> 28	<sup>h</sup> 19 <sup>m</sup> 21	<sup>°</sup> 2 <sup>'</sup> 57
Jan. 1.0	8.247 <sup>83</sup>	22.23 <sup>190</sup>	30.474 <sup>135</sup>	53.53 <sup>205</sup>	32.896 <sup>83</sup>	37.82 <sup>142</sup>
11.0	8.330 <sup>120</sup>	20.33 <sup>188</sup>	30.609 <sup>199</sup>	51.48 <sup>207</sup>	32.979 <sup>121</sup>	36.40 <sup>137</sup>
21.0	8.450 <sup>155</sup>	18.45 <sup>176</sup>	30.808 <sup>257</sup>	49.41 <sup>200</sup>	33.100 <sup>150</sup>	35.03 <sup>131</sup>
30.9	8.605 <sup>185</sup>	16.69 <sup>159</sup>	31.065 <sup>310</sup>	47.41 <sup>191</sup>	33.250 <sup>183</sup>	33.72 <sup>115</sup>
Feb. 9.9	8.790 <sup>211</sup>	15.10 <sup>135</sup>	31.375 <sup>353</sup>	45.50 <sup>178</sup>	33.433 <sup>206</sup>	32.57 <sup>94</sup>
19.9	9.001 <sup>233</sup>	13.75 <sup>103</sup>	31.728 <sup>391</sup>	43.72 <sup>161</sup>	33.639 <sup>230</sup>	31.63 <sup>69</sup>
Mar. 1.9	9.234 <sup>252</sup>	12.72 <sup>66</sup>	32.119 <sup>422</sup>	42.11 <sup>143</sup>	33.869 <sup>249</sup>	30.94 <sup>40</sup>
11.8	9.486 <sup>266</sup>	12.06 <sup>27</sup>	32.541 <sup>445</sup>	40.68 <sup>121</sup>	34.118 <sup>259</sup>	30.54 <sup>7</sup>
21.8	9.752 <sup>277</sup>	11.79 <sup>12</sup>	32.986 <sup>464</sup>	39.47 <sup>99</sup>	34.377 <sup>276</sup>	30.47 <sup>27</sup>
31.8	10.029 <sup>284</sup>	11.91 <sup>55</sup>	33.450 <sup>474</sup>	38.48 <sup>73</sup>	34.653 <sup>281</sup>	30.74 <sup>58</sup>
Apr. 10.7	10.313 <sup>286</sup>	12.46 <sup>91</sup>	33.924 <sup>478</sup>	37.75 <sup>47</sup>	34.934 <sup>285</sup>	31.32 <sup>91</sup>
20.7	10.599 <sup>283</sup>	13.37 <sup>124</sup>	34.402 <sup>473</sup>	37.28 <sup>19</sup>	35.219 <sup>284</sup>	32.23 <sup>113</sup>
30.7	10.882 <sup>273</sup>	14.61 <sup>155</sup>	34.875 <sup>460</sup>	37.09 <sup>10</sup>	35.503 <sup>277</sup>	33.36 <sup>139</sup>
May 10.7	11.155 <sup>260</sup>	16.16 <sup>178</sup>	35.335 <sup>439</sup>	37.19 <sup>39</sup>	35.780 <sup>267</sup>	34.75 <sup>154</sup>
20.6	11.415 <sup>238</sup>	17.94 <sup>196</sup>	35.774 <sup>408</sup>	37.58 <sup>67</sup>	36.047 <sup>246</sup>	36.29 <sup>167</sup>
30.6	11.653 <sup>213</sup>	19.90 <sup>209</sup>	36.182 <sup>367</sup>	38.25 <sup>95</sup>	36.293 <sup>221</sup>	37.96 <sup>173</sup>
June 9.6	11.866 <sup>182</sup>	21.99 <sup>212</sup>	36.549 <sup>319</sup>	39.20 <sup>120</sup>	36.514 <sup>193</sup>	39.69 <sup>175</sup>
19.6	12.048 <sup>147</sup>	24.11 <sup>212</sup>	36.868 <sup>262</sup>	40.40 <sup>142</sup>	36.707 <sup>157</sup>	41.44 <sup>173</sup>
29.5	12.195 <sup>107</sup>	26.23 <sup>203</sup>	37.130 <sup>197</sup>	41.82 <sup>160</sup>	36.864 <sup>122</sup>	43.17 <sup>164</sup>
July 9.5	12.302 <sup>64</sup>	28.26 <sup>193</sup>	37.327 <sup>128</sup>	43.42 <sup>175</sup>	36.986 <sup>76</sup>	44.81 <sup>151</sup>
19.5	12.366 <sup>22</sup>	30.19 <sup>177</sup>	37.455 <sup>54</sup>	45.17 <sup>181</sup>	37.062 <sup>35</sup>	46.32 <sup>136</sup>
29.5	12.388 <sup>23</sup>	31.96 <sup>159</sup>	37.509 <sup>18</sup>	46.98 <sup>183</sup>	37.097 <sup>9</sup>	47.68 <sup>122</sup>
Aug. 8.4	12.365 <sup>65</sup>	33.55 <sup>137</sup>	37.491 <sup>90</sup>	48.81 <sup>179</sup>	37.088 <sup>52</sup>	48.90 <sup>100</sup>
18.4	12.300 <sup>103</sup>	34.92 <sup>113</sup>	37.401 <sup>157</sup>	50.60 <sup>165</sup>	37.036 <sup>89</sup>	49.90 <sup>81</sup>
28.4	12.197 <sup>137</sup>	36.05 <sup>89</sup>	37.244 <sup>215</sup>	52.25 <sup>148</sup>	36.947 <sup>123</sup>	50.71 <sup>57</sup>
Sept. 7.3	12.060 <sup>161</sup>	36.94 <sup>61</sup>	37.029 <sup>263</sup>	53.73 <sup>122</sup>	36.824 <sup>151</sup>	51.28 <sup>40</sup>
17.3	11.899 <sup>180</sup>	37.55 <sup>36</sup>	36.766 <sup>298</sup>	54.95 <sup>92</sup>	36.673 <sup>169</sup>	51.68 <sup>22</sup>
27.3	11.719 <sup>188</sup>	37.91 <sup>6</sup>	36.468 <sup>318</sup>	55.87 <sup>57</sup>	36.504 <sup>180</sup>	51.90 <sup>0</sup>
Oct. 7.3	11.531 <sup>189</sup>	37.97 <sup>19</sup>	36.150 <sup>321</sup>	56.44 <sup>19</sup>	36.324 <sup>181</sup>	51.90 <sup>21</sup>
17.2	11.342 <sup>178</sup>	37.78 <sup>48</sup>	35.829 <sup>308</sup>	56.63 <sup>19</sup>	36.143 <sup>172</sup>	51.69 <sup>40</sup>
27.2	11.164 <sup>162</sup>	37.30 <sup>77</sup>	35.521 <sup>280</sup>	56.44 <sup>58</sup>	35.971 <sup>152</sup>	51.29 <sup>61</sup>
Nov. 6.2	11.002 <sup>133</sup>	36.53 <sup>102</sup>	35.241 <sup>237</sup>	55.86 <sup>94</sup>	35.819 <sup>128</sup>	50.68 <sup>80</sup>
16.2	10.869 <sup>102</sup>	35.51 <sup>126</sup>	35.004 <sup>183</sup>	54.92 <sup>126</sup>	35.691 <sup>96</sup>	49.88 <sup>97</sup>
26.1	10.767 <sup>62</sup>	34.25 <sup>149</sup>	34.821 <sup>118</sup>	53.66 <sup>154</sup>	35.595 <sup>61</sup>	48.91 <sup>112</sup>
Dec. 6.1	10.705 <sup>24</sup>	32.76 <sup>167</sup>	34.703 <sup>49</sup>	52.12 <sup>176</sup>	35.534 <sup>19</sup>	47.79 <sup>124</sup>
16.1	10.681 <sup>18</sup>	31.09 <sup>182</sup>	34.654 <sup>22</sup>	50.36 <sup>191</sup>	35.515 <sup>20</sup>	46.55 <sup>137</sup>
26.0	10.699 <sup>59</sup>	29.27 <sup>191</sup>	34.676 <sup>92</sup>	48.45 <sup>201</sup>	35.535 <sup>59</sup>	45.18 <sup>143</sup>
36.0	10.758	27.36	34.768	46.44	35.594	43.75
Mean Place	9.315	13.38	32.637	59.16	33.943	29.49
Sec $\delta$ , Tan $\delta$	1.020	+0.203	1.721	-1.401	1.001	+0.052
L $\alpha$ , L $\delta$	-0.01	+0.1	+0.03	+0.1	0.00	+0.1
$\omega$ $\alpha$ , $\omega$ $\delta$	0.00	-0.9	+0.03	-0.9	0.00	-0.9
AUTHORITY	A. E.				A. E.	

404 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	6 Vulpeculæ. Mag. 4·6		β Cygni. Mag. 3·2		μ Aquilæ. Mag. 4·7		
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.	
	h m 19 25	° ′ 24 30	h m 19 27	° ′ 27 47	h m 19 30	° ′ 7 12	
Jan.	1·0 11·0 21·0 30·9	26·430 <sup>59</sup> 26·489 <sup>103</sup> 26·592 <sup>139</sup> 26·731 <sup>173</sup>	31·67 <sup>249</sup> 29·18 <sup>248</sup> 26·70 <sup>239</sup> 24·31 <sup>218</sup>	33·366 <sup>57</sup> 33·423 <sup>95</sup> 33·518 <sup>137</sup> 33·655 <sup>173</sup>	52·00 <sup>263</sup> 49·37 <sup>262</sup> 46·75 <sup>253</sup> 44·22 <sup>230</sup>	15·735 <sup>72</sup> 15·807 <sup>108</sup> 15·915 <sup>142</sup> 16·057 <sup>172</sup>	53·46 <sup>162</sup> 51·84 <sup>161</sup> 50·23 <sup>152</sup> 48·71 <sup>137</sup>
Feb.	9·9 19·9	26·904 <sup>204</sup> 27·108 <sup>232</sup>	22·13 <sup>190</sup> 20·23 <sup>152</sup>	33·828 <sup>204</sup> 34·032 <sup>235</sup>	41·92 <sup>201</sup> 39·91 <sup>166</sup>	16·229 <sup>198</sup> 16·427 <sup>222</sup>	47·34 <sup>115</sup> 46·19 <sup>87</sup>
Mar.	1·9 11·8 21·8 31·8	27·340 <sup>255</sup> 27·595 <sup>273</sup> 27·868 <sup>287</sup> 28·155 <sup>296</sup>	18·71 <sup>109</sup> 17·62 <sup>62</sup> 17·00 <sup>11</sup> 16·89 <sup>39</sup>	34·267 <sup>259</sup> 34·526 <sup>278</sup> 34·804 <sup>294</sup> 35·098 <sup>301</sup>	38·25 <sup>118</sup> 37·07 <sup>69</sup> 36·38 <sup>17</sup> 36·21 <sup>34</sup>	16·649 <sup>242</sup> 16·891 <sup>258</sup> 17·149 <sup>272</sup> 17·421 <sup>281</sup>	45·32 <sup>54</sup> 44·78 <sup>20</sup> 44·58 <sup>18</sup> 44·76 <sup>54</sup>
Apr.	10·8 20·7 30·7	28·451 <sup>299</sup> 28·750 <sup>297</sup> 29·047 <sup>287</sup>	17·28 <sup>88</sup> 18·16 <sup>133</sup> 19·49 <sup>172</sup>	35·399 <sup>304</sup> 35·703 <sup>304</sup> 36·007 <sup>292</sup>	36·55 <sup>86</sup> 37·41 <sup>132</sup> 38·73 <sup>176</sup>	17·702 <sup>285</sup> 17·987 <sup>286</sup> 18·273 <sup>279</sup>	45·30 <sup>89</sup> 46·19 <sup>119</sup> 47·38 <sup>146</sup>
May	10·7 20·6 30·6	29·334 <sup>273</sup> 29·607 <sup>251</sup> 29·858 <sup>223</sup>	21·21 <sup>206</sup> 23·27 <sup>233</sup> 25·60 <sup>252</sup>	36·299 <sup>278</sup> 36·577 <sup>258</sup> 36·835 <sup>225</sup>	40·49 <sup>211</sup> 42·60 <sup>241</sup> 45·01 <sup>259</sup>	18·552 <sup>268</sup> 18·820 <sup>251</sup> 19·071 <sup>227</sup>	48·84 <sup>167</sup> 50·51 <sup>183</sup> 52·34 <sup>192</sup>
June	9·6 19·6 29·5	30·081 <sup>190</sup> 30·271 <sup>152</sup> 30·423 <sup>109</sup>	28·12 <sup>263</sup> 30·75 <sup>268</sup> 33·43 <sup>264</sup>	37·060 <sup>190</sup> 37·250 <sup>154</sup> 37·404 <sup>110</sup>	47·60 <sup>275</sup> 50·35 <sup>279</sup> 53·14 <sup>278</sup>	19·298 <sup>198</sup> 19·496 <sup>164</sup> 19·660 <sup>125</sup>	54·26 <sup>196</sup> 56·22 <sup>194</sup> 58·16 <sup>187</sup>
July	9·5 19·5 29·5	30·532 <sup>65</sup> 30·597 <sup>17</sup> 30·614 <sup>28</sup>	36·07 <sup>255</sup> 38·62 <sup>240</sup> 41·02 <sup>220</sup>	37·514 <sup>64</sup> 37·578 <sup>15</sup> 37·593 <sup>30</sup>	55·92 <sup>269</sup> 58·61 <sup>255</sup> 61·16 <sup>235</sup>	19·785 <sup>83</sup> 19·868 <sup>39</sup> 19·907 <sup>4</sup>	60·03 <sup>176</sup> 61·79 <sup>160</sup> 63·39 <sup>143</sup>
Aug.	8·4 18·4 28·4	30·586 <sup>73</sup> 30·513 <sup>114</sup> 30·399 <sup>148</sup>	43·22 <sup>196</sup> 45·18 <sup>167</sup> 46·85 <sup>136</sup>	37·563 <sup>76</sup> 37·487 <sup>118</sup> 37·369 <sup>154</sup>	63·51 <sup>209</sup> 65·60 <sup>180</sup> 67·40 <sup>146</sup>	19·903 <sup>47</sup> 19·856 <sup>87</sup> 19·769 <sup>121</sup>	64·82 <sup>122</sup> 66·04 <sup>100</sup> 67·04 <sup>80</sup>
Sept.	7·3 17·3 27·3	30·251 <sup>178</sup> 30·073 <sup>198</sup> 29·875 <sup>210</sup>	48·21 <sup>103</sup> 49·24 <sup>67</sup> 49·91 <sup>31</sup>	37·215 <sup>185</sup> 37·030 <sup>204</sup> 36·826 <sup>215</sup>	68·86 <sup>116</sup> 70·02 <sup>75</sup> 70·77 <sup>40</sup>	19·648 <sup>149</sup> 19·499 <sup>170</sup> 19·329 <sup>181</sup>	67·84 <sup>53</sup> 68·37 <sup>30</sup> 68·67 <sup>7</sup>
Oct.	7·3 17·2 27·2	29·665 <sup>211</sup> 29·454 <sup>204</sup> 29·250 <sup>187</sup>	50·22 <sup>7</sup> 50·15 <sup>46</sup> 49·69 <sup>84</sup>	36·611 <sup>218</sup> 36·393 <sup>215</sup> 36·178 <sup>195</sup>	71·17 <sup>4</sup> 71·13 <sup>45</sup> 70·68 <sup>84</sup>	19·148 <sup>183</sup> 18·965 <sup>176</sup> 18·789 <sup>159</sup>	68·74 <sup>17</sup> 68·57 <sup>40</sup> 68·17 <sup>64</sup>
Nov.	6·2 16·2 26·1	29·063 <sup>162</sup> 28·901 <sup>130</sup> 28·771 <sup>92</sup>	48·85 <sup>119</sup> 47·66 <sup>156</sup> 46·10 <sup>186</sup>	35·983 <sup>172</sup> 35·811 <sup>138</sup> 35·673 <sup>103</sup>	69·84 <sup>123</sup> 68·61 <sup>160</sup> 67·01 <sup>194</sup>	18·630 <sup>136</sup> 18·494 <sup>105</sup> 18·389 <sup>69</sup>	67·53 <sup>87</sup> 66·66 <sup>107</sup> 65·59 <sup>127</sup>
Dec.	6·1 16·1 26·0 36·0	28·679 <sup>53</sup> 28·626 <sup>9</sup> 28·617 <sup>34</sup> 28·651	44·24 <sup>214</sup> 42·10 <sup>234</sup> 39·76 <sup>248</sup> 37·28	35·570 <sup>59</sup> 35·511 <sup>17</sup> 35·494 <sup>25</sup> 35·519	65·07 <sup>224</sup> 62·83 <sup>246</sup> 60·37 <sup>259</sup> 57·78	18·320 <sup>31</sup> 18·289 <sup>8</sup> 18·297 <sup>48</sup> 18·345	64·32 <sup>142</sup> 62·90 <sup>156</sup> 61·34 <sup>164</sup> 59·70
Mean Place	27·555	21·68	34·521	41·69	16·769	44·79	
Sec δ, Tan δ	1·099	+0·456	1·130	+0·527	1·008	+0·126	
L α, L δ	-0·01	+0·1	-0·01	+0·1	0·00	+0·2	
ω α, ω δ	-0·01	-0·9	-0·01	-0·9	0·00	-0·9	
AUTHORITY	A. E.						

AUTHORITY

A. E.

# APPARENT PLACES OF STARS, 1922. 405

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	<i>h</i> Sagittarii. Mag. 4.7		54 Sagittarii. Mag. 5.5		<i>f</i> Sagittarii. Mag. 5.1	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 19 31 <sup>m</sup>	<sup>°</sup> 25 3 <sup>'</sup>	<sup>h</sup> 19 36 <sup>m</sup>	<sup>°</sup> 16 28 <sup>'</sup>	<sup>h</sup> 19 41 <sup>m</sup>	<sup>°</sup> 19 56 <sup>'</sup>
Jan. 1.0	56.484 <sup>93</sup>	19.05 <sup>33</sup>	14.227 <sup>83</sup>	17.10 <sup>21</sup>	47.636 <sup>79</sup>	52.83 <sup>2</sup>
11.0	56.577 <sup>132</sup>	18.72 <sup>36</sup>	14.310 <sup>119</sup>	17.31 <sup>16</sup>	47.715 <sup>116</sup>	52.81 <sup>7</sup>
21.0	56.709 <sup>167</sup>	18.36 <sup>40</sup>	14.429 <sup>154</sup>	17.47 <sup>11</sup>	47.831 <sup>151</sup>	52.74 <sup>12</sup>
31.0	56.876 <sup>200</sup>	17.96 <sup>44</sup>	14.583 <sup>183</sup>	17.58 <sup>3</sup>	47.982 <sup>183</sup>	52.62 <sup>20</sup>
Feb. 9.9	57.076 <sup>228</sup>	17.52 <sup>50</sup>	14.766 <sup>211</sup>	17.61 <sup>7</sup>	48.165 <sup>209</sup>	52.42 <sup>28</sup>
19.9	57.304 <sup>250</sup>	17.02 <sup>56</sup>	14.977 <sup>234</sup>	17.54 <sup>20</sup>	48.374 <sup>234</sup>	52.14 <sup>38</sup>
Mar. 1.9	57.554 <sup>273</sup>	16.46 <sup>63</sup>	15.211 <sup>254</sup>	17.34 <sup>34</sup>	48.608 <sup>256</sup>	51.76 <sup>50</sup>
11.8	57.827 <sup>290</sup>	15.83 <sup>69</sup>	15.465 <sup>270</sup>	17.00 <sup>48</sup>	48.864 <sup>273</sup>	51.26 <sup>61</sup>
21.8	58.117 <sup>302</sup>	15.14 <sup>76</sup>	15.735 <sup>286</sup>	16.52 <sup>63</sup>	49.137 <sup>288</sup>	50.65 <sup>73</sup>
31.8	58.419 <sup>313</sup>	14.38 <sup>79</sup>	16.021 <sup>294</sup>	15.89 <sup>77</sup>	49.425 <sup>299</sup>	49.92 <sup>82</sup>
Apr. 10.8	58.732 <sup>319</sup>	13.59 <sup>81</sup>	16.315 <sup>302</sup>	15.12 <sup>87</sup>	49.724 <sup>307</sup>	49.10 <sup>90</sup>
20.7	59.051 <sup>320</sup>	12.78 <sup>81</sup>	16.617 <sup>302</sup>	14.25 <sup>96</sup>	50.031 <sup>309</sup>	48.20 <sup>95</sup>
30.7	59.371 <sup>314</sup>	11.97 <sup>77</sup>	16.919 <sup>298</sup>	13.29 <sup>101</sup>	50.340 <sup>305</sup>	47.25 <sup>96</sup>
May 10.7	59.685 <sup>303</sup>	11.20 <sup>72</sup>	17.217 <sup>289</sup>	12.28 <sup>101</sup>	50.645 <sup>297</sup>	46.29 <sup>94</sup>
20.7	59.988 <sup>287</sup>	10.48 <sup>62</sup>	17.506 <sup>273</sup>	11.27 <sup>99</sup>	50.942 <sup>281</sup>	45.35 <sup>88</sup>
30.6	60.275 <sup>262</sup>	9.86 <sup>50</sup>	17.779 <sup>251</sup>	10.28 <sup>93</sup>	51.223 <sup>259</sup>	44.47 <sup>80</sup>
June 9.6	60.537 <sup>230</sup>	9.36 <sup>36</sup>	18.030 <sup>222</sup>	9.35 <sup>84</sup>	51.482 <sup>231</sup>	43.67 <sup>69</sup>
19.6	60.767 <sup>196</sup>	9.00 <sup>22</sup>	18.252 <sup>188</sup>	8.51 <sup>72</sup>	51.713 <sup>197</sup>	42.98 <sup>55</sup>
29.5	60.963 <sup>154</sup>	8.78 <sup>9</sup>	18.440 <sup>148</sup>	7.79 <sup>59</sup>	51.910 <sup>156</sup>	42.43 <sup>40</sup>
July 9.5	61.117 <sup>108</sup>	8.69 <sup>8</sup>	18.588 <sup>106</sup>	7.20 <sup>44</sup>	52.066 <sup>113</sup>	42.03 <sup>25</sup>
19.5	61.225 <sup>58</sup>	8.77 <sup>20</sup>	18.694 <sup>58</sup>	6.76 <sup>29</sup>	52.179 <sup>66</sup>	41.78 <sup>10</sup>
29.5	61.283 <sup>11</sup>	8.97 <sup>34</sup>	18.752 <sup>14</sup>	6.47 <sup>16</sup>	52.245 <sup>19</sup>	41.68 <sup>4</sup>
Aug. 8.4	61.294 <sup>37</sup>	9.31 <sup>42</sup>	18.766 <sup>33</sup>	6.31 <sup>3</sup>	52.264 <sup>28</sup>	41.72 <sup>16</sup>
18.4	61.257 <sup>83</sup>	9.73 <sup>48</sup>	18.733 <sup>75</sup>	6.28 <sup>8</sup>	52.236 <sup>72</sup>	41.88 <sup>25</sup>
28.4	61.174 <sup>122</sup>	10.21 <sup>50</sup>	18.658 <sup>113</sup>	6.36 <sup>17</sup>	52.164 <sup>111</sup>	42.13 <sup>32</sup>
Sept. 7.4	61.052 <sup>153</sup>	10.71 <sup>50</sup>	18.545 <sup>144</sup>	6.53 <sup>24</sup>	52.053 <sup>143</sup>	42.45 <sup>37</sup>
17.3	60.899 <sup>178</sup>	11.21 <sup>46</sup>	18.401 <sup>167</sup>	6.77 <sup>27</sup>	51.910 <sup>168</sup>	42.82 <sup>38</sup>
27.3	60.721 <sup>191</sup>	11.67 <sup>40</sup>	18.234 <sup>180</sup>	7.04 <sup>30</sup>	51.742 <sup>183</sup>	43.20 <sup>38</sup>
Oct. 7.3	60.530 <sup>194</sup>	12.07 <sup>31</sup>	18.054 <sup>183</sup>	7.34 <sup>31</sup>	51.559 <sup>186</sup>	43.58 <sup>34</sup>
17.2	60.336 <sup>187</sup>	12.38 <sup>23</sup>	17.871 <sup>176</sup>	7.65 <sup>30</sup>	51.373 <sup>181</sup>	43.92 <sup>30</sup>
27.2	60.149 <sup>169</sup>	12.61 <sup>12</sup>	17.695 <sup>159</sup>	7.95 <sup>29</sup>	51.192 <sup>164</sup>	44.22 <sup>25</sup>
Nov. 6.2	59.980 <sup>140</sup>	12.73 <sup>3</sup>	17.536 <sup>135</sup>	8.24 <sup>28</sup>	51.028 <sup>140</sup>	44.47 <sup>21</sup>
16.2	59.840 <sup>107</sup>	12.76 <sup>6</sup>	17.401 <sup>102</sup>	8.52 <sup>27</sup>	50.888 <sup>108</sup>	44.68 <sup>16</sup>
26.2	59.733 <sup>64</sup>	12.70 <sup>14</sup>	17.299 <sup>65</sup>	8.79 <sup>27</sup>	50.780 <sup>70</sup>	44.84 <sup>12</sup>
Dec. 6.1	59.669 <sup>23</sup>	12.56 <sup>18</sup>	17.234 <sup>24</sup>	9.06 <sup>26</sup>	50.710 <sup>30</sup>	44.96 <sup>8</sup>
16.1	59.646 <sup>22</sup>	12.38 <sup>23</sup>	17.210 <sup>17</sup>	9.32 <sup>25</sup>	50.680 <sup>10</sup>	45.04 <sup>6</sup>
26.1	59.668 <sup>67</sup>	12.15 <sup>29</sup>	17.227 <sup>57</sup>	9.57 <sup>25</sup>	50.690 <sup>56</sup>	45.10 <sup>2</sup>
36.0	59.735	11.86	17.284	9.82	50.746	45.12
Mean Place	57.722	25.24	15.358	23.74	48.801	58.98
Sec δ, Tan δ	1.104	-0.468	1.043	-0.296	1.064	-0.363
L α, L δ	+0.01	+0.2	+0.01	+0.2	+0.01	+0.2
ω α, ω δ	+0.01	-0.9	+0.01	-0.9	+0.01	-0.9

AUTHORITY

A. E.

406 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	δ Cygni. Mag. 3.0		γ Aquilæ. Mag. 2.8		α Aquilæ. Mag. 0.9	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
	<sup>h</sup> 19 42	<sup>m</sup> 44 56	<sup>h</sup> 19 42	<sup>m</sup> 10 25	<sup>h</sup> 19 46	<sup>m</sup> 8 39
Jan. 1.0	30.879 <sub>10</sub>	35.17 <sub>311</sub>	32.063 <sub>57</sub>	28.80 <sub>176</sub>	57.654 <sub>57</sub>	49.25 <sub>164</sub>
11.0	30.889 <sub>63</sub>	32.06 <sub>317</sub>	32.120 <sub>94</sub>	27.04 <sub>175</sub>	57.711 <sub>95</sub>	47.61 <sub>164</sub>
21.0	30.952 <sub>116</sub>	28.89 <sub>312</sub>	32.214 <sub>125</sub>	25.29 <sub>169</sub>	57.806 <sub>126</sub>	45.97 <sub>154</sub>
31.0	31.068 <sub>166</sub>	25.77 <sub>290</sub>	32.339 <sub>160</sub>	23.60 <sub>150</sub>	57.932 <sub>158</sub>	44.43 <sub>138</sub>
Feb. 9.9	31.234 <sub>214</sub>	22.87 <sub>261</sub>	32.499 <sub>188</sub>	22.10 <sub>128</sub>	58.090 <sub>187</sub>	43.05 <sub>117</sub>
19.9	31.448 <sub>254</sub>	20.26 <sub>219</sub>	32.687 <sub>213</sub>	20.82 <sub>99</sub>	58.277 <sub>213</sub>	41.88 <sub>88</sub>
Mar. 1.9	31.702 <sub>287</sub>	18.07 <sub>175</sub>	32.900 <sub>235</sub>	19.83 <sub>65</sub>	58.490 <sub>236</sub>	41.00 <sub>56</sub>
11.9	31.989 <sub>320</sub>	16.32 <sub>117</sub>	33.135 <sub>254</sub>	19.18 <sub>32</sub>	58.726 <sub>251</sub>	40.44 <sub>20</sub>
21.8	32.309 <sub>343</sub>	15.15 <sub>55</sub>	33.389 <sub>267</sub>	18.86 <sub>10</sub>	58.977 <sub>268</sub>	40.24 <sub>14</sub>
31.8	32.652 <sub>355</sub>	14.60 <sub>2</sub>	33.656 <sub>280</sub>	18.96 <sub>52</sub>	59.245 <sub>279</sub>	40.38 <sub>55</sub>
Apr. 10.8	33.007 <sub>365</sub>	14.62 <sub>65</sub>	33.936 <sub>286</sub>	19.48 <sub>87</sub>	59.524 <sub>287</sub>	40.93 <sub>91</sub>
20.7	33.372 <sub>359</sub>	15.27 <sub>121</sub>	34.222 <sub>288</sub>	20.35 <sub>119</sub>	59.811 <sub>289</sub>	41.84 <sub>120</sub>
30.7	33.731 <sub>346</sub>	16.48 <sub>174</sub>	34.510 <sub>286</sub>	21.54 <sub>150</sub>	60.100 <sub>285</sub>	43.04 <sub>150</sub>
May 10.7	34.077 <sub>329</sub>	18.22 <sub>220</sub>	34.796 <sub>272</sub>	23.04 <sub>175</sub>	60.385 <sub>275</sub>	44.54 <sub>173</sub>
20.7	34.406 <sub>302</sub>	20.42 <sub>259</sub>	35.068 <sub>257</sub>	24.79 <sub>193</sub>	60.660 <sub>259</sub>	46.27 <sub>190</sub>
30.6	34.708 <sub>263</sub>	23.01 <sub>290</sub>	35.325 <sub>234</sub>	26.72 <sub>205</sub>	60.919 <sub>236</sub>	48.17 <sub>203</sub>
June 9.6	34.971 <sub>221</sub>	25.91 <sub>311</sub>	35.559 <sub>206</sub>	28.77 <sub>212</sub>	61.155 <sub>210</sub>	50.20 <sub>207</sub>
19.6	35.192 <sub>173</sub>	29.02 <sub>325</sub>	35.765 <sub>170</sub>	30.89 <sub>212</sub>	61.365 <sub>175</sub>	52.27 <sub>203</sub>
29.6	35.365 <sub>118</sub>	32.27 <sub>330</sub>	35.935 <sub>135</sub>	33.01 <sub>205</sub>	61.540 <sub>138</sub>	54.30 <sub>199</sub>
July 9.5	35.483 <sub>63</sub>	35.57 <sub>327</sub>	36.070 <sub>91</sub>	35.06 <sub>195</sub>	61.678 <sub>94</sub>	56.29 <sub>191</sub>
19.5	35.546 <sub>6</sub>	38.84 <sub>317</sub>	36.161 <sub>46</sub>	37.01 <sub>182</sub>	61.772 <sub>50</sub>	58.20 <sub>172</sub>
29.5	35.552 <sub>50</sub>	42.01 <sub>297</sub>	36.207 <sub>5</sub>	38.83 <sub>162</sub>	61.822 <sub>7</sub>	59.92 <sub>155</sub>
Aug. 8.4	35.502 <sub>106</sub>	44.98 <sub>273</sub>	36.212 <sub>40</sub>	40.45 <sub>142</sub>	61.829 <sub>35</sub>	61.47 <sub>134</sub>
18.4	35.396 <sub>155</sub>	47.71 <sub>242</sub>	36.172 <sub>79</sub>	41.87 <sub>120</sub>	61.794 <sub>76</sub>	62.81 <sub>115</sub>
28.4	35.241 <sub>201</sub>	50.13 <sub>208</sub>	36.093 <sub>117</sub>	43.07 <sub>93</sub>	61.718 <sub>111</sub>	63.96 <sub>87</sub>
Sept. 7.4	35.040 <sub>238</sub>	52.21 <sub>167</sub>	35.976 <sub>145</sub>	44.00 <sub>72</sub>	61.607 <sub>142</sub>	64.83 <sub>63</sub>
17.3	34.802 <sub>263</sub>	53.88 <sub>124</sub>	35.831 <sub>168</sub>	44.72 <sub>41</sub>	61.465 <sub>163</sub>	65.46 <sub>38</sub>
27.3	34.539 <sub>283</sub>	55.12 <sub>79</sub>	35.663 <sub>180</sub>	45.13 <sub>19</sub>	61.302 <sub>174</sub>	65.84 <sub>18</sub>
Oct. 7.3	34.256 <sub>290</sub>	55.91 <sub>30</sub>	35.483 <sub>185</sub>	45.32 <sub>8</sub>	61.128 <sub>182</sub>	66.02 <sub>11</sub>
17.2	33.966 <sub>286</sub>	56.21 <sub>20</sub>	35.298 <sub>179</sub>	45.24 <sub>37</sub>	60.946 <sub>176</sub>	65.91 <sub>37</sub>
27.2	33.680 <sub>271</sub>	56.01 <sub>70</sub>	35.119 <sub>166</sub>	44.87 <sub>63</sub>	60.770 <sub>163</sub>	65.54 <sub>61</sub>
Nov. 6.2	33.409 <sub>250</sub>	55.31 <sub>121</sub>	34.953 <sub>143</sub>	44.24 <sub>89</sub>	60.607 <sub>144</sub>	64.93 <sub>83</sub>
16.2	33.159 <sub>215</sub>	54.10 <sub>168</sub>	34.810 <sub>115</sub>	43.35 <sub>112</sub>	60.463 <sub>113</sub>	64.10 <sub>106</sub>
26.1	32.944 <sub>176</sub>	52.42 <sub>214</sub>	34.695 <sub>79</sub>	42.23 <sub>134</sub>	60.350 <sub>79</sub>	63.04 <sub>126</sub>
Dec. 6.1	32.768 <sub>129</sub>	50.28 <sub>251</sub>	34.616 <sub>47</sub>	40.89 <sub>151</sub>	60.271 <sub>43</sub>	61.78 <sub>143</sub>
16.1	32.639 <sub>79</sub>	47.77 <sub>283</sub>	34.569 <sub>5</sub>	39.38 <sub>166</sub>	60.228 <sub>3</sub>	60.35 <sub>156</sub>
26.1	32.560 <sub>24</sub>	44.94 <sub>304</sub>	34.564 <sub>31</sub>	37.72 <sub>176</sub>	60.225 <sub>32</sub>	58.79 <sub>163</sub>
36.0	32.536	41.90	34.595	35.96	60.257	57.16
Mean Place	32.277	22.79	33.077	19.79	58.659	40.54
Sec δ, Tan δ	1.413	+0.998	1.017	+0.184	1.012	+0.152
L α, L δ	-0.02	+0.2	0.00	+0.2	0.00	+0.2
ω α, ω δ	-0.03	-0.9	-0.01	-0.9	0.00	-0.9
AUTHORITY	A. E.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 407

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\iota$ Sagittarii. Mag. 4.2		$\beta$ Aquilæ. Mag. 3.9		$\gamma$ Sagittarii. Mag. 5.1	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 19 <sup>m</sup> 49	<sup>°</sup> 42 <sup>'</sup> 4	<sup>h</sup> 19 <sup>m</sup> 51	<sup>°</sup> 6 <sup>'</sup> 12	<sup>h</sup> 19 <sup>m</sup> 53	<sup>°</sup> 15 <sup>'</sup> 41
Jan.	1.0 51.298 <sup>s</sup> 81	24.26 <sup>°</sup> 140	27.916 <sup>s</sup> 53	48.03 <sup>°</sup> 151	30.583 <sup>s</sup> 64	51.24 <sup>°</sup> 21
	11.0 51.379 <sup>s</sup> 129	22.86 <sup>°</sup> 147	27.969 <sup>s</sup> 87	46.52 <sup>°</sup> 152	30.647 <sup>s</sup> 101	51.45 <sup>°</sup> 17
	21.0 51.508 <sup>s</sup> 176	21.39 <sup>°</sup> 149	28.056 <sup>s</sup> 120	45.00 <sup>°</sup> 141	30.748 <sup>s</sup> 135	51.62 <sup>°</sup> 10
	31.0 51.684 <sup>s</sup> 216	19.90 <sup>°</sup> 149	28.176 <sup>s</sup> 151	43.59 <sup>°</sup> 130	30.883 <sup>s</sup> 166	51.72 <sup>°</sup> 1
Feb.	9.9 51.900 <sup>s</sup> 253	18.41 <sup>°</sup> 147	28.327 <sup>s</sup> 183	42.29 <sup>°</sup> 108	31.049 <sup>s</sup> 194	51.73 <sup>°</sup> 10
	19.9 52.153 <sup>s</sup> 285	16.94 <sup>°</sup> 143	28.510 <sup>s</sup> 204	41.21 <sup>°</sup> 83	31.243 <sup>s</sup> 219	51.63 <sup>°</sup> 24
Mar.	1.9 52.438 <sup>s</sup> 312	15.51 <sup>°</sup> 137	28.714 <sup>s</sup> 230	40.38 <sup>°</sup> 52	31.462 <sup>s</sup> 241	51.39 <sup>°</sup> 39
	11.9 52.750 <sup>s</sup> 336	14.14 <sup>°</sup> 129	28.944 <sup>s</sup> 249	39.86 <sup>°</sup> 18	31.703 <sup>s</sup> 260	51.00 <sup>°</sup> 55
	21.8 53.086 <sup>s</sup> 356	12.85 <sup>°</sup> 118	29.193 <sup>s</sup> 261	39.68 <sup>°</sup> 18	31.963 <sup>s</sup> 276	50.45 <sup>°</sup> 70
	31.8 53.442 <sup>s</sup> 371	11.67 <sup>°</sup> 106	29.454 <sup>s</sup> 277	39.86 <sup>°</sup> 53	32.239 <sup>s</sup> 291	49.75 <sup>°</sup> 84
Apr.	10.8 53.813 <sup>s</sup> 379	10.61 <sup>°</sup> 91	29.731 <sup>s</sup> 286	40.39 <sup>°</sup> 87	32.530 <sup>s</sup> 298	48.91 <sup>°</sup> 97
	20.7 54.192 <sup>s</sup> 383	9.70 <sup>°</sup> 74	30.017 <sup>s</sup> 287	41.26 <sup>°</sup> 116	32.828 <sup>s</sup> 303	47.94 <sup>°</sup> 106
	30.7 54.575 <sup>s</sup> 381	8.96 <sup>°</sup> 55	30.304 <sup>s</sup> 285	42.42 <sup>°</sup> 143	33.131 <sup>s</sup> 302	46.88 <sup>°</sup> 111
May	10.7 54.956 <sup>s</sup> 369	8.41 <sup>°</sup> 33	30.589 <sup>s</sup> 280	43.85 <sup>°</sup> 163	33.433 <sup>s</sup> 294	45.77 <sup>°</sup> 113
	20.7 55.325 <sup>s</sup> 352	8.08 <sup>°</sup> 9	30.869 <sup>s</sup> 262	45.48 <sup>°</sup> 183	33.727 <sup>s</sup> 281	44.64 <sup>°</sup> 110
	30.6 55.677 <sup>s</sup> 325	7.99 <sup>°</sup> 14	31.131 <sup>s</sup> 240	47.31 <sup>°</sup> 189	34.008 <sup>s</sup> 261	43.54 <sup>°</sup> 105
June	9.6 56.002 <sup>s</sup> 290	8.13 <sup>°</sup> 38	31.371 <sup>s</sup> 216	49.20 <sup>°</sup> 194	34.269 <sup>s</sup> 234	42.49 <sup>°</sup> 95
	19.6 56.292 <sup>s</sup> 248	8.51 <sup>°</sup> 61	31.587 <sup>s</sup> 182	51.14 <sup>°</sup> 191	34.503 <sup>s</sup> 201	41.54 <sup>°</sup> 83
	29.6 56.540 <sup>s</sup> 200	9.12 <sup>°</sup> 82	31.769 <sup>s</sup> 141	53.05 <sup>°</sup> 186	34.704 <sup>s</sup> 163	40.71 <sup>°</sup> 69
July	9.5 56.740 <sup>s</sup> 146	9.94 <sup>°</sup> 101	31.910 <sup>s</sup> 105	54.91 <sup>°</sup> 177	34.867 <sup>s</sup> 121	40.02 <sup>°</sup> 54
	19.5 56.886 <sup>s</sup> 88	10.95 <sup>°</sup> 115	32.015 <sup>s</sup> 58	56.68 <sup>°</sup> 159	34.988 <sup>s</sup> 75	39.48 <sup>°</sup> 37
	29.5 56.974 <sup>s</sup> 29	12.10 <sup>°</sup> 126	32.073 <sup>s</sup> 16	58.27 <sup>°</sup> 141	35.063 <sup>s</sup> 29	39.11 <sup>°</sup> 22
Aug.	8.4 57.003 <sup>s</sup> 30	13.36 <sup>°</sup> 132	32.089 <sup>s</sup> 29	59.68 <sup>°</sup> 123	35.092 <sup>s</sup> 18	38.89 <sup>°</sup> 7
	18.4 56.973 <sup>s</sup> 86	14.68 <sup>°</sup> 130	32.060 <sup>s</sup> 69	60.91 <sup>°</sup> 104	35.074 <sup>s</sup> 61	38.82 <sup>°</sup> 5
	28.4 56.887 <sup>s</sup> 136	15.98 <sup>°</sup> 124	31.991 <sup>s</sup> 105	61.95 <sup>°</sup> 80	35.013 <sup>s</sup> 100	38.87 <sup>°</sup> 16
Sept.	7.4 56.751 <sup>s</sup> 179	17.22 <sup>°</sup> 113	31.886 <sup>s</sup> 138	62.75 <sup>°</sup> 55	34.913 <sup>s</sup> 133	39.03 <sup>°</sup> 24
	17.3 56.572 <sup>s</sup> 211	18.35 <sup>°</sup> 95	31.748 <sup>s</sup> 158	63.30 <sup>°</sup> 33	34.780 <sup>s</sup> 158	39.27 <sup>°</sup> 30
	27.3 56.361 <sup>s</sup> 233	19.30 <sup>°</sup> 74	31.590 <sup>s</sup> 172	63.63 <sup>°</sup> 10	34.622 <sup>s</sup> 174	39.57 <sup>°</sup> 34
Oct.	7.3 56.128 <sup>s</sup> 241	20.04 <sup>°</sup> 49	31.418 <sup>s</sup> 178	63.73 <sup>°</sup> 11	34.448 <sup>s</sup> 180	39.91 <sup>°</sup> 35
	17.2 55.887 <sup>s</sup> 237	20.53 <sup>°</sup> 22	31.240 <sup>s</sup> 175	63.62 <sup>°</sup> 36	34.268 <sup>s</sup> 176	40.26 <sup>°</sup> 36
	27.2 55.650 <sup>s</sup> 219	20.75 <sup>°</sup> 7	31.065 <sup>s</sup> 167	63.26 <sup>°</sup> 58	34.092 <sup>s</sup> 163	40.62 <sup>°</sup> 35
Nov.	6.2 55.431 <sup>s</sup> 191	20.68 <sup>°</sup> 34	30.898 <sup>s</sup> 141	62.68 <sup>°</sup> 80	33.929 <sup>s</sup> 141	40.97 <sup>°</sup> 34
	16.2 55.240 <sup>s</sup> 153	20.34 <sup>°</sup> 61	30.757 <sup>s</sup> 116	61.88 <sup>°</sup> 99	33.788 <sup>s</sup> 111	41.31 <sup>°</sup> 32
	26.1 55.087 <sup>s</sup> 106	19.73 <sup>°</sup> 83	30.641 <sup>s</sup> 80	60.89 <sup>°</sup> 117	33.677 <sup>s</sup> 77	41.63 <sup>°</sup> 32
Dec.	6.1 54.981 <sup>s</sup> 57	18.90 <sup>°</sup> 104	30.561 <sup>s</sup> 48	59.72 <sup>°</sup> 133	33.600 <sup>s</sup> 38	41.95 <sup>°</sup> 30
	16.1 54.924 <sup>s</sup> 4	17.86 <sup>°</sup> 120	30.513 <sup>s</sup> 10	58.39 <sup>°</sup> 144	33.562 <sup>s</sup> 1	42.25 <sup>°</sup> 29
	26.1 54.920 <sup>s</sup> 49	16.66 <sup>°</sup> 131	30.503 <sup>s</sup> 29	56.95 <sup>°</sup> 152	33.563 <sup>s</sup> 40	42.54 <sup>°</sup> 27
	36.0 54.969 <sup>s</sup>	15.35 <sup>°</sup>	30.532 <sup>s</sup>	55.43 <sup>°</sup>	33.603 <sup>s</sup>	42.81 <sup>°</sup>
Mean Place	52.922	28.30	28.909	39.48	31.689	57.34
Sec $\delta$ , Tan $\delta$	1.347	-0.903	1.006	+0.109	1.039	-0.281
L $\alpha$ , L $\delta$	+0.02	+0.2	0.00	+0.2	+0.01	+0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.03	-0.9	0.00	-0.9	+0.01	-0.9
AUTHORITY	A. E.					

## 408 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\epsilon$ Sagittarii. Mag. 4.6		$\delta$ Pavonis. Mag. 3.6		$\theta$ Aquilæ. Mag. 3.4	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 19 57	<sup>m</sup> 27 55	<sup>h</sup> 20 1	<sup>m</sup> 66 22	<sup>h</sup> 20 7	<sup>m</sup> 1 2
Jan. 1.0	50.593 <sup>65</sup>	35.52 <sup>55</sup>	1.69 <sup>7</sup>	54.39 <sup>263</sup>	15.872 <sup>43</sup>	66.17 <sup>105</sup>
11.0	50.658 <sup>106</sup>	34.97 <sup>61</sup>	1.76 <sup>16</sup>	51.76 <sup>274</sup>	15.915 <sup>77</sup>	67.22 <sup>103</sup>
21.0	50.764 <sup>143</sup>	34.36 <sup>68</sup>	1.92 <sup>25</sup>	49.02 <sup>274</sup>	15.992 <sup>110</sup>	68.25 <sup>97</sup>
31.0	50.907 <sup>177</sup>	33.68 <sup>73</sup>	2.17 <sup>34</sup>	46.28 <sup>268</sup>	16.102 <sup>141</sup>	69.22 <sup>83</sup>
Feb. 9.9	51.084 <sup>208</sup>	32.95 <sup>80</sup>	2.51 <sup>41</sup>	43.60 <sup>254</sup>	16.243 <sup>170</sup>	70.05 <sup>64</sup>
19.9	51.292 <sup>235</sup>	32.15 <sup>85</sup>	2.92 <sup>48</sup>	41.06 <sup>239</sup>	16.413 <sup>196</sup>	70.69 <sup>44</sup>
Mar. 1.9	51.527 <sup>260</sup>	31.30 <sup>91</sup>	3.40 <sup>54</sup>	38.67 <sup>215</sup>	16.609 <sup>219</sup>	71.13 <sup>19</sup>
11.9	51.787 <sup>281</sup>	30.39 <sup>96</sup>	3.94 <sup>58</sup>	36.52 <sup>188</sup>	16.828 <sup>242</sup>	71.32 <sup>9</sup>
21.8	52.068 <sup>298</sup>	29.43 <sup>100</sup>	4.52 <sup>62</sup>	34.64 <sup>159</sup>	17.070 <sup>255</sup>	71.23 <sup>39</sup>
31.8	52.366 <sup>312</sup>	28.43 <sup>102</sup>	5.14 <sup>65</sup>	33.05 <sup>125</sup>	17.325 <sup>273</sup>	70.84 <sup>68</sup>
Apr. 10.8	52.678 <sup>324</sup>	27.41 <sup>101</sup>	5.79 <sup>67</sup>	31.80 <sup>90</sup>	17.598 <sup>285</sup>	70.16 <sup>93</sup>
20.8	53.002 <sup>328</sup>	26.40 <sup>98</sup>	6.46 <sup>67</sup>	30.90 <sup>52</sup>	17.883 <sup>290</sup>	69.23 <sup>116</sup>
30.7	53.330 <sup>327</sup>	25.42 <sup>91</sup>	7.13 <sup>66</sup>	30.38 <sup>14</sup>	18.173 <sup>290</sup>	68.07 <sup>137</sup>
May 10.7	53.657 <sup>320</sup>	24.51 <sup>82</sup>	7.79 <sup>65</sup>	30.24 <sup>27</sup>	18.463 <sup>285</sup>	66.70 <sup>152</sup>
20.7	53.977 <sup>307</sup>	23.69 <sup>69</sup>	8.44 <sup>60</sup>	30.51 <sup>66</sup>	18.748 <sup>271</sup>	65.18 <sup>165</sup>
30.6	54.284 <sup>286</sup>	23.00 <sup>54</sup>	9.04 <sup>57</sup>	31.17 <sup>104</sup>	19.019 <sup>257</sup>	63.53 <sup>166</sup>
June 9.6	54.570 <sup>257</sup>	22.46 <sup>38</sup>	9.61 <sup>50</sup>	32.21 <sup>140</sup>	19.276 <sup>229</sup>	61.87 <sup>166</sup>
19.6	54.827 <sup>223</sup>	22.08 <sup>19</sup>	10.11 <sup>43</sup>	33.61 <sup>171</sup>	19.505 <sup>197</sup>	60.21 <sup>163</sup>
29.6	55.050 <sup>182</sup>	21.89 <sup>1</sup>	10.54 <sup>33</sup>	35.32 <sup>199</sup>	19.702 <sup>164</sup>	58.58 <sup>156</sup>
July 9.5	55.232 <sup>136</sup>	21.88 <sup>17</sup>	10.87 <sup>25</sup>	37.31 <sup>220</sup>	19.866 <sup>121</sup>	57.02 <sup>139</sup>
19.5	55.368 <sup>87</sup>	22.05 <sup>34</sup>	11.12 <sup>14</sup>	39.51 <sup>235</sup>	19.987 <sup>79</sup>	55.63 <sup>125</sup>
29.5	55.455 <sup>37</sup>	22.39 <sup>48</sup>	11.26 <sup>4</sup>	41.86 <sup>241</sup>	20.066 <sup>34</sup>	54.38 <sup>111</sup>
Aug. 8.5	55.492 <sup>13</sup>	22.87 <sup>59</sup>	11.30 <sup>6</sup>	44.27 <sup>242</sup>	20.100 <sup>8</sup>	53.27 <sup>89</sup>
18.4	55.479 <sup>62</sup>	23.46 <sup>67</sup>	11.24 <sup>17</sup>	46.69 <sup>231</sup>	20.092 <sup>53</sup>	52.38 <sup>71</sup>
28.4	55.417 <sup>104</sup>	24.13 <sup>70</sup>	11.07 <sup>25</sup>	49.00 <sup>213</sup>	20.039 <sup>90</sup>	51.67 <sup>50</sup>
Sept. 7.4	55.313 <sup>142</sup>	24.83 <sup>70</sup>	10.82 <sup>34</sup>	51.13 <sup>187</sup>	19.949 <sup>123</sup>	51.17 <sup>32</sup>
17.3	55.171 <sup>170</sup>	25.53 <sup>66</sup>	10.48 <sup>40</sup>	53.00 <sup>153</sup>	19.826 <sup>148</sup>	50.85 <sup>18</sup>
27.3	55.001 <sup>189</sup>	26.19 <sup>58</sup>	10.08 <sup>45</sup>	54.53 <sup>111</sup>	19.678 <sup>163</sup>	50.67 <sup>3</sup>
Oct. 7.3	54.812 <sup>196</sup>	26.77 <sup>47</sup>	9.63 <sup>47</sup>	55.64 <sup>68</sup>	19.515 <sup>173</sup>	50.70 <sup>18</sup>
17.3	54.616 <sup>193</sup>	27.24 <sup>35</sup>	9.16 <sup>48</sup>	56.32 <sup>16</sup>	19.342 <sup>170</sup>	50.88 <sup>33</sup>
27.2	54.423 <sup>180</sup>	27.59 <sup>21</sup>	8.68 <sup>45</sup>	56.48 <sup>33</sup>	19.172 <sup>162</sup>	51.21 <sup>49</sup>
Nov. 6.2	54.243 <sup>156</sup>	27.80 <sup>7</sup>	8.23 <sup>41</sup>	56.15 <sup>80</sup>	19.010 <sup>143</sup>	51.70 <sup>63</sup>
16.2	54.087 <sup>125</sup>	27.87 <sup>7</sup>	7.82 <sup>35</sup>	55.35 <sup>130</sup>	18.867 <sup>117</sup>	52.33 <sup>76</sup>
26.2	53.962 <sup>88</sup>	27.80 <sup>19</sup>	7.47 <sup>28</sup>	54.05 <sup>169</sup>	18.750 <sup>86</sup>	53.09 <sup>87</sup>
Dec. 6.1	53.874 <sup>47</sup>	27.61 <sup>30</sup>	7.19 <sup>18</sup>	52.36 <sup>206</sup>	18.664 <sup>52</sup>	53.96 <sup>97</sup>
16.1	53.827 <sup>3</sup>	27.31 <sup>40</sup>	7.01 <sup>9</sup>	50.30 <sup>232</sup>	18.612 <sup>17</sup>	54.93 <sup>105</sup>
26.1	53.824 <sup>39</sup>	26.91 <sup>48</sup>	6.92 <sup>0</sup>	47.98 <sup>253</sup>	18.595 <sup>21</sup>	55.98 <sup>108</sup>
36.0	53.863	26.43	6.92	45.45	18.616	57.06
Mean Place	51.860	40.22	5.07	56.39	16.850	73.65
Sec $\delta$ , Tan $\delta$	1.132	-0.530	2.496	-2.287	1.000	-0.018
L $\alpha$ , L $\delta$	+0.01	+0.2	+0.05	+0.2	0.00	+0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.02	-0.9	+0.08	-0.9	0.00	-0.9
AUTHORITY	A. N.		A. E.		A. E.	

# APPARENT PLACES OF STARS, 1922. 409

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	4 Capricorni. Mag. 6.0		$\alpha^2$ Capricorni. Mag. 3.8		$\beta$ Capricorni. Mag. 3.3	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> 20 13	<sup>m</sup> 22 2	<sup>h</sup> 20 13	<sup>m</sup> 12 46	<sup>h</sup> 20 16	<sup>m</sup> 15 1
Jan. 1.0	25.367 <sup>s</sup> 47	62.50 <sup>o</sup> 21	42.648 <sup>s</sup> 45	69.60 <sup>o</sup> 36	36.763 <sup>s</sup> 42	38.02 <sup>o</sup> 22
11.0	25.414 84	62.29 28	42.693 77	69.96 30	36.805 76	38.24 16
21.0	25.498 120	62.01 36	42.770 113	70.26 23	36.881 111	38.40 7
31.0	25.618 153	61.65 45	42.883 142	70.49 12	36.992 142	38.47 3
Feb. 10.0	25.771 182	61.20 54	43.025 173	70.61 2	37.134 171	38.44 16
19.9	25.953 211	60.66 65	43.198 198	70.59 17	37.305 199	38.28 30
Mar. 1.9	26.164 236	60.01 76	43.396 225	70.42 39	37.504 222	37.98 47
11.9	26.400 257	59.25 87	43.621 244	70.03 53	37.726 245	37.51 63
21.8	26.657 278	58.38 96	43.865 264	69.50 72	37.971 265	36.88 79
31.8	26.935 294	57.42 105	44.129 280	68.78 90	38.236 281	36.09 95
Apr. 10.8	27.229 306	56.37 111	44.409 293	67.88 104	38.517 293	35.14 108
20.8	27.535 314	55.26 114	44.702 298	66.84 116	38.810 302	34.06 117
30.7	27.849 316	54.12 112	45.000 301	65.68 126	39.112 303	32.89 124
May 10.7	28.165 312	53.00 109	45.301 297	64.42 129	39.415 301	31.65 127
20.7	28.477 300	51.91 100	45.598 285	63.13 130	39.716 291	30.38 124
30.7	28.777 284	50.91 89	45.883 267	61.83 127	40.007 273	29.14 119
June 9.6	29.061 257	50.02 75	46.150 247	60.56 117	40.280 249	27.95 109
19.6	29.318 226	49.27 58	46.397 213	59.39 106	40.529 219	26.86 96
29.6	29.544 188	48.69 41	46.610 179	58.33 96	40.748 182	25.90 81
July 9.5	29.732 145	48.28 22	46.789 136	57.37 75	40.930 142	25.09 64
19.5	29.877 99	48.06 4	46.925 91	56.62 57	41.072 97	24.45 47
29.5	29.976 50	48.02 12	47.016 47	56.05 44	41.169 50	23.98 29
Aug. 8.5	30.026 2	48.14 27	47.063 1	55.61 26	41.219 4	23.69 13
18.4	30.028 44	48.41 40	47.062 41	55.35 10	41.223 41	23.56 2
28.4	29.984 88	48.81 47	47.021 85	55.25 5	41.182 82	23.58 15
Sept. 7.4	29.896 124	49.28 53	46.936 117	55.30 16	41.100 117	23.73 25
17.4	29.772 153	49.81 55	46.819 145	55.46 23	40.983 145	23.98 33
27.3	29.619 172	50.36 54	46.674 163	55.69 31	40.838 164	24.31 38
Oct. 7.3	29.447 183	50.90 50	46.511 173	56.00 36	40.674 174	24.69 40
17.3	29.264 182	51.40 43	46.338 171	56.36 41	40.500 174	25.09 42
27.2	29.082 173	51.83 36	46.167 164	56.77 43	40.326 165	25.51 42
Nov. 6.2	28.909 152	52.19 27	46.003 145	57.20 43	40.161 147	25.93 40
16.2	28.757 127	52.46 17	45.858 119	57.63 44	40.014 122	26.33 39
26.2	28.630 92	52.63 10	45.739 87	58.07 45	39.892 90	26.72 37
Dec. 6.1	28.538 56	52.73 2	45.652 56	58.52 45	39.802 56	27.09 34
16.1	28.482 17	52.75 7	45.596 18	58.97 45	39.746 19	27.43 31
26.1	28.465 22	52.68 13	45.578 18	59.42 39	39.727 18	27.74 27
36.1	28.487	52.55	45.596	59.81	39.745	28.01
Mean Place	26.524	67.05	43.696	75.34	37.824	43.38
Sec $\delta$ , Tan $\delta$	1.079	-0.405	1.025	-0.227	1.035	-0.268
L $\alpha$ , L $\delta$	+0.01	+0.2	+0.01	+0.2	+0.01	+0.2
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.01	-0.8	+0.01	-0.8	+0.01	-0.8
AUTHORITY			A. E.		A. N.	

# 410 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		$\gamma$ Cygni. Mag. 2.3		$\alpha$ Pavonis. Mag. 2.1		$\rho$ Capricorni. Mag. 5.0	
		R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.
		<sup>h</sup> 20	<sup>m</sup> 19	<sup>h</sup> 20	<sup>m</sup> 19	<sup>h</sup> 20	<sup>m</sup> 24
			<sup>°</sup> 40		<sup>°</sup> 56		<sup>°</sup> 18
			<sup>'</sup> 0		<sup>'</sup> 58		<sup>'</sup> 4
Jan.	1.1	24.611 <sup>s</sup>	36.10 <sup>s</sup>	26.769 <sup>s</sup>	70.31 <sup>s</sup>	23.729 <sup>s</sup>	16.38 <sup>s</sup>
	11.0	24.588 <sup>23</sup>	33.28 <sup>282</sup>	26.802 <sup>33</sup>	68.13 <sup>218</sup>	23.763 <sup>34</sup>	16.41 <sup>3</sup>
	21.0	24.611 <sup>23</sup>	30.36 <sup>292</sup>	26.899 <sup>97</sup>	65.77 <sup>236</sup>	23.833 <sup>70</sup>	16.36 <sup>5</sup>
	31.0	24.682 <sup>71</sup>	27.44 <sup>292</sup>	27.065 <sup>166</sup>	63.37 <sup>240</sup>	23.938 <sup>105</sup>	16.22 <sup>14</sup>
Feb.	10.0	24.798 <sup>116</sup>	24.65 <sup>279</sup>	27.289 <sup>224</sup>	60.96 <sup>241</sup>	24.075 <sup>137</sup>	15.98 <sup>24</sup>
	19.9	24.959 <sup>161</sup>	22.08 <sup>257</sup>	27.570 <sup>281</sup>	58.61 <sup>235</sup>	24.242 <sup>167</sup>	15.62 <sup>36</sup>
Mar.	1.9	25.164 <sup>205</sup>	19.85 <sup>223</sup>	27.899 <sup>329</sup>	56.33 <sup>228</sup>	24.436 <sup>194</sup>	15.12 <sup>50</sup>
	11.9	25.404 <sup>240</sup>	18.04 <sup>181</sup>	28.275 <sup>376</sup>	54.19 <sup>214</sup>	24.656 <sup>220</sup>	14.49 <sup>63</sup>
	21.9	25.676 <sup>272</sup>	16.70 <sup>134</sup>	28.687 <sup>412</sup>	52.21 <sup>198</sup>	24.900 <sup>244</sup>	13.71 <sup>78</sup>
	31.8	25.978 <sup>302</sup>	15.93 <sup>77</sup>	29.133 <sup>446</sup>	50.46 <sup>175</sup>	25.164 <sup>264</sup>	12.79 <sup>92</sup>
Apr.	10.8	26.302 <sup>324</sup>	15.74 <sup>19</sup>	29.608 <sup>475</sup>	48.96 <sup>150</sup>	25.446 <sup>282</sup>	11.75 <sup>104</sup>
	20.8	26.641 <sup>339</sup>	16.09 <sup>35</sup>	30.098 <sup>490</sup>	47.73 <sup>123</sup>	25.742 <sup>296</sup>	10.60 <sup>115</sup>
	30.7	26.988 <sup>347</sup>	17.02 <sup>93</sup>	30.601 <sup>503</sup>	46.83 <sup>90</sup>	26.048 <sup>306</sup>	9.39 <sup>121</sup>
May	10.7	27.329 <sup>341</sup>	18.47 <sup>145</sup>	31.105 <sup>504</sup>	46.24 <sup>59</sup>	26.357 <sup>309</sup>	8.15 <sup>124</sup>
	20.7	27.661 <sup>332</sup>	20.41 <sup>194</sup>	31.599 <sup>494</sup>	45.99 <sup>25</sup>	26.664 <sup>307</sup>	6.91 <sup>124</sup>
	30.7	27.974 <sup>313</sup>	22.74 <sup>233</sup>	32.072 <sup>473</sup>	46.08 <sup>9</sup>	26.962 <sup>298</sup>	5.71 <sup>120</sup>
June	9.6	28.261 <sup>287</sup>	25.40 <sup>266</sup>	32.519 <sup>447</sup>	46.56 <sup>48</sup>	27.244 <sup>282</sup>	4.61 <sup>110</sup>
	19.6	28.513 <sup>252</sup>	28.32 <sup>292</sup>	32.922 <sup>403</sup>	47.37 <sup>81</sup>	27.502 <sup>258</sup>	3.62 <sup>99</sup>
	29.6	28.724 <sup>211</sup>	31.40 <sup>308</sup>	33.275 <sup>353</sup>	48.48 <sup>111</sup>	27.731 <sup>229</sup>	2.78 <sup>84</sup>
July	9.6	28.890 <sup>166</sup>	34.58 <sup>318</sup>	33.568 <sup>293</sup>	49.91 <sup>143</sup>	27.923 <sup>192</sup>	2.11 <sup>67</sup>
	19.5	29.005 <sup>115</sup>	37.77 <sup>319</sup>	33.791 <sup>223</sup>	51.56 <sup>165</sup>	28.075 <sup>152</sup>	1.61 <sup>50</sup>
	29.5	29.063 <sup>58</sup>	40.88 <sup>311</sup>	33.941 <sup>150</sup>	53.44 <sup>188</sup>	28.181 <sup>106</sup>	1.31 <sup>30</sup>
Aug.	8.5	29.069 <sup>6</sup>	43.91 <sup>303</sup>	34.012 <sup>71</sup>	55.45 <sup>201</sup>	28.240 <sup>59</sup>	1.18 <sup>13</sup>
	18.4	29.025 <sup>44</sup>	46.70 <sup>279</sup>	34.005 <sup>7</sup>	57.51 <sup>206</sup>	28.252 <sup>12</sup>	1.22 <sup>4</sup>
	28.4	28.928 <sup>97</sup>	49.23 <sup>253</sup>	33.919 <sup>86</sup>	59.54 <sup>203</sup>	28.218 <sup>34</sup>	1.41 <sup>19</sup>
Sept.	7.4	28.785 <sup>143</sup>	51.48 <sup>225</sup>	33.761 <sup>158</sup>	61.47 <sup>193</sup>	28.141 <sup>77</sup>	1.71 <sup>30</sup>
	17.4	28.604 <sup>181</sup>	53.35 <sup>187</sup>	33.543 <sup>218</sup>	63.25 <sup>178</sup>	28.029 <sup>112</sup>	2.10 <sup>39</sup>
	27.3	28.393 <sup>211</sup>	54.85 <sup>150</sup>	33.271 <sup>272</sup>	64.77 <sup>152</sup>	27.886 <sup>143</sup>	2.56 <sup>46</sup>
Oct.	7.3	28.157 <sup>236</sup>	55.93 <sup>108</sup>	32.961 <sup>310</sup>	66.01 <sup>124</sup>	27.723 <sup>163</sup>	3.04 <sup>48</sup>
	17.3	27.907 <sup>250</sup>	56.55 <sup>62</sup>	32.628 <sup>333</sup>	66.84 <sup>83</sup>	27.548 <sup>175</sup>	3.52 <sup>48</sup>
	27.3	27.655 <sup>252</sup>	56.74 <sup>19</sup>	32.290 <sup>338</sup>	67.28 <sup>44</sup>	27.372 <sup>176</sup>	3.98 <sup>46</sup>
Nov.	6.2	27.409 <sup>246</sup>	56.43 <sup>31</sup>	31.964 <sup>326</sup>	67.29 <sup>1</sup>	27.204 <sup>168</sup>	4.41 <sup>43</sup>
	16.2	27.176 <sup>233</sup>	55.61 <sup>82</sup>	31.664 <sup>300</sup>	66.88 <sup>41</sup>	27.053 <sup>151</sup>	4.78 <sup>37</sup>
	26.2	26.969 <sup>207</sup>	54.34 <sup>127</sup>	31.406 <sup>258</sup>	66.03 <sup>85</sup>	26.926 <sup>127</sup>	5.11 <sup>33</sup>
Dec.	6.1	26.793 <sup>176</sup>	52.62 <sup>172</sup>	31.198 <sup>208</sup>	64.82 <sup>121</sup>	26.830 <sup>96</sup>	5.38 <sup>27</sup>
	16.1	26.653 <sup>140</sup>	50.49 <sup>213</sup>	31.052 <sup>146</sup>	63.26 <sup>156</sup>	26.767 <sup>63</sup>	5.59 <sup>21</sup>
	26.1	26.555 <sup>98</sup>	48.07 <sup>242</sup>	30.973 <sup>79</sup>	61.39 <sup>187</sup>	26.741 <sup>26</sup>	5.74 <sup>15</sup>
	36.1	26.503 <sup>52</sup>	45.35 <sup>272</sup>	30.963 <sup>10</sup>	59.32 <sup>207</sup>	26.752 <sup>11</sup>	5.83 <sup>9</sup>
Mean Place		25.711	22.72	29.146	71.10	24.810	20.99
Sec $\delta$ , Tan $\delta$		1.305	+0.839	1.835	-1.539	1.052	-0.326
L $\alpha$ , L $\delta$		-0.02	+0.2	+0.03	+0.2	+0.01	+0.2
$\omega$ $\alpha$ , $\omega$ $\delta$		-0.03	-0.8	+0.06	-0.8	+0.01	-0.8
AUTHORITY		A. E.		A. E.		A. N.	



# APPARENT PLACES OF STARS, 1922. 411

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		ε Delphini. Mag. 4.0		α Indi. Mag. 3.2		α Delphini. Mag. 3.9	
		R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
		<sup>h</sup> 20	<sup>m</sup> 29	<sup>h</sup> 20	<sup>m</sup> 32	<sup>h</sup> 20	<sup>m</sup> 36
		<sup>s</sup> 11	<sup>s</sup> 2	<sup>s</sup> 47	<sup>s</sup> 33	<sup>s</sup> 20	<sup>s</sup> 15
Jan.	1.1	28.325 <sub>12</sub>	23.16 <sub>164</sub>	3.292 <sub>21</sub>	52.81 <sub>171</sub>	0.062 <sub>2</sub>	20.61 <sub>183</sub>
	11.0	28.337 <sub>46</sub>	21.52 <sub>166</sub>	3.313 <sub>72</sub>	51.10 <sub>184</sub>	0.064 <sub>35</sub>	18.78 <sub>186</sub>
	21.0	28.383 <sub>82</sub>	19.86 <sub>159</sub>	3.385 <sub>125</sub>	49.26 <sub>195</sub>	0.099 <sub>72</sub>	16.92 <sub>185</sub>
	31.0	28.465 <sub>111</sub>	18.27 <sub>147</sub>	3.510 <sub>172</sub>	47.31 <sub>200</sub>	0.171 <sub>103</sub>	15.07 <sub>172</sub>
Feb.	10.0	28.576 <sub>145</sub>	16.80 <sub>130</sub>	3.682 <sub>216</sub>	45.31 <sub>202</sub>	0.274 <sub>140</sub>	13.35 <sub>150</sub>
	19.9	28.721 <sub>172</sub>	15.50 <sub>102</sub>	3.898 <sub>257</sub>	43.29 <sub>199</sub>	0.414 <sub>165</sub>	11.85 <sub>127</sub>
Mar.	1.9	28.893 <sub>203</sub>	14.48 <sub>70</sub>	4.155 <sub>292</sub>	41.30 <sub>195</sub>	0.579 <sub>198</sub>	10.58 <sub>93</sub>
	11.9	29.096 <sub>227</sub>	13.78 <sub>36</sub>	4.447 <sub>330</sub>	39.35 <sub>187</sub>	0.777 <sub>224</sub>	9.65 <sub>55</sub>
	21.9	29.323 <sub>248</sub>	13.42 <sub>2</sub>	4.777 <sub>355</sub>	37.48 <sub>173</sub>	1.001 <sub>248</sub>	9.10 <sub>13</sub>
	31.8	29.571 <sub>264</sub>	13.44 <sub>41</sub>	5.132 <sub>382</sub>	35.75 <sub>158</sub>	1.249 <sub>265</sub>	8.97 <sub>26</sub>
Apr.	10.8	29.835 <sub>281</sub>	13.85 <sub>78</sub>	5.514 <sub>399</sub>	34.17 <sub>139</sub>	1.514 <sub>283</sub>	9.23 <sub>70</sub>
	20.8	30.116 <sub>291</sub>	14.63 <sub>113</sub>	5.913 <sub>413</sub>	32.78 <sub>117</sub>	1.797 <sub>293</sub>	9.93 <sub>106</sub>
	30.7	30.407 <sub>292</sub>	15.76 <sub>145</sub>	6.326 <sub>417</sub>	31.61 <sub>90</sub>	2.090 <sub>297</sub>	10.99 <sub>145</sub>
May	10.7	30.699 <sub>290</sub>	17.21 <sub>171</sub>	6.743 <sub>415</sub>	30.71 <sub>63</sub>	2.387 <sub>297</sub>	12.44 <sub>174</sub>
	20.7	30.989 <sub>284</sub>	18.92 <sub>193</sub>	7.158 <sub>404</sub>	30.08 <sub>36</sub>	2.684 <sub>285</sub>	14.18 <sub>200</sub>
	30.7	31.273 <sub>264</sub>	20.85 <sub>207</sub>	7.562 <sub>381</sub>	29.72 <sub>3</sub>	2.969 <sub>268</sub>	16.18 <sub>220</sub>
June	9.6	31.537 <sub>238</sub>	22.92 <sub>217</sub>	7.943 <sub>351</sub>	29.69 <sub>28</sub>	3.237 <sub>243</sub>	18.38 <sub>230</sub>
	19.6	31.775 <sub>211</sub>	25.09 <sub>218</sub>	8.294 <sub>312</sub>	29.97 <sub>58</sub>	3.480 <sub>217</sub>	20.68 <sub>237</sub>
	29.6	31.986 <sub>175</sub>	27.27 <sub>216</sub>	8.606 <sub>264</sub>	30.55 <sub>89</sub>	3.697 <sub>179</sub>	23.05 <sub>236</sub>
July	9.6	32.161 <sub>134</sub>	29.43 <sub>211</sub>	8.870 <sub>207</sub>	31.44 <sub>112</sub>	3.876 <sub>140</sub>	25.41 <sub>232</sub>
	19.5	32.295 <sub>94</sub>	31.54 <sub>195</sub>	9.077 <sub>149</sub>	32.56 <sub>135</sub>	4.016 <sub>95</sub>	27.73 <sub>220</sub>
	29.5	32.389 <sub>44</sub>	33.49 <sub>177</sub>	9.226 <sub>83</sub>	33.91 <sub>153</sub>	4.111 <sub>48</sub>	29.93 <sub>203</sub>
Aug.	8.5	32.433 <sub>5</sub>	35.26 <sub>161</sub>	9.309 <sub>20</sub>	35.44 <sub>163</sub>	4.159 <sub>8</sub>	31.96 <sub>183</sub>
	18.4	32.438 <sub>41</sub>	36.87 <sub>137</sub>	9.329 <sub>44</sub>	37.07 <sub>169</sub>	4.167 <sub>39</sub>	33.79 <sub>162</sub>
	28.4	32.397 <sub>80</sub>	38.24 <sub>114</sub>	9.285 <sub>107</sub>	38.76 <sub>167</sub>	4.128 <sub>79</sub>	35.41 <sub>140</sub>
Sept.	7.4	32.317 <sub>114</sub>	39.38 <sub>89</sub>	9.178 <sub>157</sub>	40.43 <sub>158</sub>	4.049 <sub>114</sub>	36.81 <sub>109</sub>
	17.4	32.203 <sub>142</sub>	40.27 <sub>60</sub>	9.021 <sub>203</sub>	42.01 <sub>141</sub>	3.935 <sub>142</sub>	37.90 <sub>82</sub>
	27.3	32.061 <sub>160</sub>	40.87 <sub>36</sub>	8.818 <sub>235</sub>	43.42 <sub>119</sub>	3.793 <sub>160</sub>	38.72 <sub>53</sub>
Oct.	7.3	31.901 <sub>171</sub>	41.23 <sub>8</sub>	8.583 <sub>254</sub>	44.61 <sub>91</sub>	3.633 <sub>175</sub>	39.25 <sub>23</sub>
	17.3	31.730 <sub>175</sub>	41.31 <sub>16</sub>	8.329 <sub>262</sub>	45.52 <sub>59</sub>	3.458 <sub>180</sub>	39.48 <sub>8</sub>
	27.3	31.555 <sub>169</sub>	41.15 <sub>44</sub>	8.067 <sub>255</sub>	46.11 <sub>27</sub>	3.278 <sub>174</sub>	39.40 <sub>37</sub>
Nov.	6.2	31.386 <sub>157</sub>	40.71 <sub>70</sub>	7.812 <sub>234</sub>	46.38 <sub>10</sub>	3.104 <sub>162</sub>	39.03 <sub>69</sub>
	16.2	31.229 <sub>133</sub>	40.01 <sub>95</sub>	7.578 <sub>205</sub>	46.28 <sub>43</sub>	2.942 <sub>141</sub>	38.34 <sub>98</sub>
	26.2	31.096 <sub>108</sub>	39.06 <sub>114</sub>	7.373 <sub>166</sub>	45.85 <sub>79</sub>	2.801 <sub>120</sub>	37.36 <sub>122</sub>
Dec.	6.1	30.988 <sub>77</sub>	37.92 <sub>136</sub>	7.207 <sub>116</sub>	45.06 <sub>108</sub>	2.681 <sub>86</sub>	36.14 <sub>146</sub>
	16.1	30.911 <sub>46</sub>	36.56 <sub>151</sub>	7.091 <sub>65</sub>	43.98 <sub>134</sub>	2.595 <sub>57</sub>	34.68 <sub>164</sub>
	26.1	30.865 <sub>9</sub>	35.05 <sub>160</sub>	7.026 <sub>12</sub>	42.64 <sub>156</sub>	2.538 <sub>20</sub>	33.04 <sub>179</sub>
	36.1	30.856	33.45	7.014	41.08	2.518	31.25
Mean Place		29.209	14.07	5.100	53.30	0.922	10.74
Sec δ, Tan δ		1.019	+0.195	1.482	-1.094	1.038	+0.280
L α, L δ		0.00	+0.2	+0.02	+0.2	-0.01	+0.2
ω α, ω δ		-0.01	-0.8	+0.04	-0.8	-0.01	-0.8
AUTHORITY		A. E.		A. E.		A. E.	

# 412 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		$\beta$ Pavonis. Mag. 3.6		$\alpha$ Cygni. Mag. 1.3		$\epsilon$ Cygni. Mag. 2.6	
		R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
		<sup>h</sup> 20 <sup>m</sup> 37	<sup>°</sup> 66 <sup>'</sup> 28	<sup>h</sup> 20 <sup>m</sup> 38	<sup>°</sup> 44 <sup>'</sup> 59	<sup>h</sup> 20 <sup>m</sup> 43	<sup>°</sup> 33 <sup>'</sup> 40
Jan.	1.1	53.49 <sup>s</sup>	67.61 <sup>s</sup>	45.275 <sup>s</sup>	78.08 <sup>s</sup>	2.409 <sup>s</sup>	51.59 <sup>s</sup>
	11.0	53.46 <sup>3</sup>	65.01 <sup>260</sup>	45.215 <sup>60</sup>	75.25 <sup>283</sup>	2.374 <sup>35</sup>	49.09 <sup>250</sup>
	21.0	53.52 <sup>6</sup>	62.19 <sup>282</sup>	45.203 <sup>12</sup>	72.31 <sup>294</sup>	2.383 <sup>9</sup>	46.49 <sup>260</sup>
	31.0	53.67 <sup>15</sup>	59.31 <sup>288</sup>	45.245 <sup>42</sup>	69.29 <sup>302</sup>	2.432 <sup>49</sup>	43.87 <sup>262</sup>
Feb.	10.0	53.91 <sup>24</sup>	56.39 <sup>292</sup>	45.335 <sup>90</sup>	66.31 <sup>298</sup>	2.523 <sup>91</sup>	41.31 <sup>256</sup>
	19.9	54.23 <sup>32</sup>	53.52 <sup>287</sup>	45.476 <sup>141</sup>	63.55 <sup>276</sup>	2.655 <sup>132</sup>	38.97 <sup>234</sup>
Mar.	1.9	54.62 <sup>39</sup>	50.76 <sup>276</sup>	45.667 <sup>191</sup>	61.07 <sup>248</sup>	2.824 <sup>169</sup>	36.91 <sup>206</sup>
	11.9	55.08 <sup>46</sup>	48.16 <sup>260</sup>	45.899 <sup>232</sup>	59.01 <sup>206</sup>	3.032 <sup>208</sup>	35.22 <sup>169</sup>
	21.9	55.60 <sup>52</sup>	45.80 <sup>236</sup>	46.174 <sup>275</sup>	57.42 <sup>159</sup>	3.273 <sup>241</sup>	33.96 <sup>126</sup>
	31.8	56.16 <sup>56</sup>	43.69 <sup>211</sup>	46.481 <sup>307</sup>	56.37 <sup>105</sup>	3.542 <sup>269</sup>	33.22 <sup>74</sup>
Apr.	10.8	56.77 <sup>61</sup>	41.89 <sup>180</sup>	46.818 <sup>337</sup>	55.89 <sup>48</sup>	3.834 <sup>292</sup>	33.00 <sup>22</sup>
	20.8	57.41 <sup>64</sup>	40.45 <sup>144</sup>	47.174 <sup>356</sup>	55.99 <sup>10</sup>	4.147 <sup>313</sup>	33.30 <sup>30</sup>
	30.7	58.06 <sup>65</sup>	39.38 <sup>107</sup>	47.540 <sup>366</sup>	56.69 <sup>70</sup>	4.470 <sup>323</sup>	34.13 <sup>83</sup>
May	10.7	58.73 <sup>67</sup>	38.69 <sup>69</sup>	47.910 <sup>370</sup>	57.94 <sup>125</sup>	4.801 <sup>331</sup>	35.47 <sup>134</sup>
	20.7	59.38 <sup>65</sup>	38.41 <sup>28</sup>	48.270 <sup>360</sup>	59.69 <sup>175</sup>	5.124 <sup>323</sup>	37.22 <sup>175</sup>
	30.7	60.02 <sup>64</sup>	38.56 <sup>15</sup>	48.612 <sup>342</sup>	61.91 <sup>222</sup>	5.437 <sup>313</sup>	39.40 <sup>218</sup>
June	9.6	60.62 <sup>60</sup>	39.15 <sup>59</sup>	48.931 <sup>319</sup>	64.50 <sup>259</sup>	5.727 <sup>290</sup>	41.89 <sup>249</sup>
	19.6	61.16 <sup>54</sup>	40.12 <sup>97</sup>	49.212 <sup>281</sup>	67.41 <sup>291</sup>	5.993 <sup>266</sup>	44.62 <sup>273</sup>
	29.6	61.65 <sup>49</sup>	41.48 <sup>136</sup>	49.453 <sup>241</sup>	70.53 <sup>312</sup>	6.222 <sup>229</sup>	47.53 <sup>291</sup>
July	9.6	62.05 <sup>40</sup>	43.18 <sup>170</sup>	49.643 <sup>190</sup>	73.78 <sup>325</sup>	6.410 <sup>188</sup>	50.53 <sup>300</sup>
	19.5	62.37 <sup>32</sup>	45.15 <sup>197</sup>	49.783 <sup>140</sup>	77.10 <sup>332</sup>	6.553 <sup>143</sup>	53.56 <sup>303</sup>
	29.5	62.59 <sup>22</sup>	47.41 <sup>226</sup>	49.863 <sup>80</sup>	80.40 <sup>330</sup>	6.649 <sup>96</sup>	56.52 <sup>296</sup>
Aug.	8.5	62.70 <sup>11</sup>	49.79 <sup>238</sup>	49.887 <sup>24</sup>	83.59 <sup>319</sup>	6.692 <sup>43</sup>	59.39 <sup>287</sup>
	18.4	62.72 <sup>2</sup>	52.25 <sup>246</sup>	49.855 <sup>32</sup>	86.63 <sup>304</sup>	6.684 <sup>8</sup>	62.07 <sup>268</sup>
	28.4	62.62 <sup>10</sup>	54.69 <sup>244</sup>	49.768 <sup>87</sup>	89.46 <sup>283</sup>	6.630 <sup>54</sup>	64.51 <sup>244</sup>
Sept.	7.4	62.43 <sup>19</sup>	57.03 <sup>234</sup>	49.629 <sup>139</sup>	91.98 <sup>252</sup>	6.532 <sup>98</sup>	66.70 <sup>219</sup>
	17.4	62.14 <sup>29</sup>	59.17 <sup>214</sup>	49.450 <sup>179</sup>	94.18 <sup>220</sup>	6.393 <sup>139</sup>	68.55 <sup>185</sup>
	27.3	61.78 <sup>36</sup>	61.04 <sup>187</sup>	49.231 <sup>219</sup>	95.99 <sup>181</sup>	6.224 <sup>169</sup>	70.06 <sup>151</sup>
Oct.	7.3	61.37 <sup>41</sup>	62.55 <sup>151</sup>	48.985 <sup>246</sup>	97.38 <sup>139</sup>	6.028 <sup>196</sup>	71.19 <sup>113</sup>
	17.3	60.91 <sup>46</sup>	63.64 <sup>109</sup>	48.722 <sup>263</sup>	98.33 <sup>95</sup>	5.818 <sup>210</sup>	71.90 <sup>71</sup>
	27.3	60.43 <sup>48</sup>	64.25 <sup>61</sup>	48.449 <sup>273</sup>	98.77 <sup>44</sup>	5.599 <sup>219</sup>	72.23 <sup>33</sup>
Nov.	6.2	59.96 <sup>47</sup>	64.36 <sup>11</sup>	48.178 <sup>271</sup>	98.74 <sup>3</sup>	5.384 <sup>215</sup>	72.07 <sup>16</sup>
	16.2	59.52 <sup>44</sup>	63.94 <sup>42</sup>	47.917 <sup>261</sup>	98.17 <sup>57</sup>	5.177 <sup>207</sup>	71.49 <sup>58</sup>
	26.2	59.11 <sup>41</sup>	63.03 <sup>91</sup>	47.675 <sup>242</sup>	97.10 <sup>107</sup>	4.989 <sup>188</sup>	70.48 <sup>101</sup>
Dec.	6.1	58.77 <sup>34</sup>	61.67 <sup>136</sup>	47.463 <sup>212</sup>	95.57 <sup>153</sup>	4.828 <sup>161</sup>	69.04 <sup>144</sup>
	16.1	58.51 <sup>26</sup>	59.87 <sup>180</sup>	47.285 <sup>178</sup>	93.58 <sup>199</sup>	4.697 <sup>131</sup>	67.26 <sup>178</sup>
	26.1	58.33 <sup>18</sup>	57.71 <sup>216</sup>	47.150 <sup>135</sup>	91.20 <sup>238</sup>	4.601 <sup>96</sup>	65.11 <sup>215</sup>
	36.1	58.24 <sup>9</sup>	55.26 <sup>245</sup>	47.058 <sup>92</sup>	88.53 <sup>267</sup>	4.543 <sup>58</sup>	62.72 <sup>239</sup>
Mean Place		56.87	66.25	46.343	63.36	3.307	38.52
Sec $\delta$ , Tan $\delta$		2.506	-2.299	1.414	+1.000	1.202	+0.666
L $\alpha$ , L $\delta$		+0.05	+0.3	-0.02	+0.3	-0.01	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$		+0.10	-0.8	-0.04	-0.8	-0.03	-0.8
AUTHORITY		A. E.		A. E.		A. E.	

APPARENT PLACES OF STARS, 1922. 413

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		ε Aquarii. Mag. 3.8		μ Aquarii. Mag. 4.8		32 Vulpeculæ. Mag. 5.2	
		R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
		<sup>h</sup> 20	<sup>m</sup> 43	<sup>h</sup> 20	<sup>m</sup> 48	<sup>h</sup> 20	<sup>m</sup> 51
		<sup>s</sup>	<sup>°</sup> 9	<sup>s</sup>	<sup>°</sup> 9	<sup>s</sup>	<sup>°</sup> 27
			<sup>′</sup> 46		<sup>′</sup> 16		<sup>′</sup> 45
Jan.	1.1	26.348	50.60	25.962	32.07	13.301	49.21
	11.1	26.361 <sub>13</sub>	51.10	25.971 <sub>9</sub>	32.59	13.270 <sub>31</sub>	46.96 <sub>225</sub>
	21.0	26.409 <sub>48</sub>	51.53	26.013 <sub>42</sub>	33.04	13.277 <sub>45</sub>	44.60 <sub>236</sub>
	31.0	26.488 <sub>79</sub>	51.86	26.087 <sub>74</sub>	33.40	13.323 <sub>36</sub>	42.22 <sub>238</sub>
Feb.	10.0	26.598 <sub>110</sub>	52.08	26.193 <sub>106</sub>	33.63	13.406 <sub>23</sub>	39.92 <sub>230</sub>
	19.9	26.739 <sub>141</sub>	52.15	26.327 <sub>134</sub>	33.72	13.526 <sub>9</sub>	37.81 <sub>211</sub>
Mar.	1.9	26.908 <sub>169</sub>	52.04	26.492 <sub>165</sub>	33.63	13.682 <sub>156</sub>	35.97 <sub>184</sub>
	11.9	27.105 <sub>197</sub>	51.74	26.683 <sub>191</sub>	33.33	13.875 <sub>193</sub>	34.47 <sub>150</sub>
	21.9	27.325 <sub>220</sub>	51.21	26.900 <sub>217</sub>	32.82	14.097 <sub>222</sub>	33.39 <sub>108</sub>
	31.8	27.569 <sub>244</sub>	50.47	27.140 <sub>240</sub>	32.10	14.348 <sub>72</sub>	32.78 <sub>61</sub>
Apr.	10.8	27.834 <sub>265</sub>	49.53	27.402 <sub>262</sub>	31.16	14.623 <sub>94</sub>	32.66 <sub>12</sub>
	20.8	28.114 <sub>280</sub>	48.41	27.681 <sub>279</sub>	30.03	14.919 <sub>113</sub>	33.02 <sub>36</sub>
	30.8	28.408 <sub>294</sub>	47.14	27.972 <sub>291</sub>	28.73	15.227 <sub>130</sub>	33.89 <sub>87</sub>
May	10.7	28.707 <sub>299</sub>	45.74	28.271 <sub>299</sub>	27.31	15.542 <sub>142</sub>	35.20 <sub>131</sub>
	20.7	29.008 <sub>301</sub>	44.27	28.572 <sub>301</sub>	25.81	15.855 <sub>150</sub>	36.92 <sub>172</sub>
	30.7	29.301 <sub>293</sub>	42.76	28.867 <sub>295</sub>	24.28	16.160 <sub>153</sub>	39.01 <sub>209</sub>
June	9.6	29.581 <sub>280</sub>	41.28	29.149 <sub>282</sub>	22.77	16.447 <sub>151</sub>	41.38 <sub>237</sub>
	19.6	29.842 <sub>261</sub>	39.85	29.412 <sub>263</sub>	21.30	16.711 <sub>147</sub>	43.96 <sub>258</sub>
	29.6	30.076 <sub>234</sub>	38.54	29.648 <sub>236</sub>	19.94	16.941 <sub>136</sub>	46.70 <sub>274</sub>
July	9.6	30.275 <sub>199</sub>	37.34	29.851 <sub>203</sub>	18.72	17.135 <sub>122</sub>	49.52 <sub>282</sub>
	19.5	30.435 <sub>160</sub>	36.32	30.016 <sub>165</sub>	17.65	17.287 <sub>107</sub>	52.33 <sub>281</sub>
	29.5	30.553 <sub>118</sub>	35.47	30.138 <sub>122</sub>	16.76	17.392 <sub>89</sub>	55.08 <sub>275</sub>
Aug.	8.5	30.626 <sub>73</sub>	34.82	30.215 <sub>77</sub>	16.07	17.448 <sub>56</sub>	57.71 <sub>263</sub>
	18.5	30.653 <sub>27</sub>	34.37	30.248 <sub>45</sub>	15.57	17.458 <sub>10</sub>	60.17 <sub>246</sub>
	28.4	30.636 <sub>17</sub>	34.09	30.234 <sub>14</sub>	15.27	17.421 <sub>37</sub>	62.41 <sub>224</sub>
Sept.	7.4	30.577 <sub>59</sub>	33.98	30.180 <sub>54</sub>	15.13	17.340 <sub>14</sub>	64.36 <sub>81</sub>
	17.4	30.481 <sub>96</sub>	34.02	30.087 <sub>93</sub>	15.15	17.222 <sub>2</sub>	66.05 <sub>118</sub>
	27.3	30.355 <sub>126</sub>	34.19	29.965 <sub>122</sub>	15.31	17.072 <sub>16</sub>	67.39 <sub>150</sub>
Oct.	7.3	30.207 <sub>148</sub>	34.48	29.820 <sub>145</sub>	15.59	16.898 <sub>28</sub>	68.39 <sub>174</sub>
	17.3	30.046 <sub>161</sub>	34.85	29.661 <sub>159</sub>	15.95	16.706 <sub>36</sub>	69.02 <sub>192</sub>
	27.3	29.881 <sub>165</sub>	35.28	29.496 <sub>165</sub>	16.39	16.508 <sub>44</sub>	69.26 <sub>198</sub>
Nov.	6.2	29.719 <sub>162</sub>	35.77	29.335 <sub>161</sub>	16.88	16.312 <sub>49</sub>	69.11 <sub>196</sub>
	16.2	29.569 <sub>150</sub>	36.30	29.185 <sub>150</sub>	17.42	16.124 <sub>54</sub>	68.55 <sub>188</sub>
	26.2	29.440 <sub>129</sub>	36.85	29.055 <sub>130</sub>	17.98	15.953 <sub>56</sub>	67.60 <sub>171</sub>
Dec.	6.2	29.338 <sub>102</sub>	37.42	28.950 <sub>105</sub>	18.56	15.805 <sub>58</sub>	66.30 <sub>148</sub>
	16.1	29.264 <sub>74</sub>	37.98	28.873 <sub>77</sub>	19.15	15.684 <sub>121</sub>	64.67 <sub>87</sub>
	26.1	29.223 <sub>41</sub>	38.55	28.828 <sub>45</sub>	19.73	15.597 <sub>58</sub>	62.73 <sub>194</sub>
	36.1	29.215 <sub>8</sub>	39.09	28.816 <sub>12</sub>	20.29	15.544 <sub>56</sub>	60.56 <sub>217</sub>
Mean Place		27.298	55.79	26.893	37.20	14.120	37.01
Sec δ, Tan δ		1.015	−0.172	1.013	−0.163	1.130	+0.526
L α, L δ		0.00	+0.3	0.00	+0.3	−0.01	+0.3
ω α, ω δ		+0.01	−0.8	+0.01	−0.7	−0.02	−0.7
AUTHORITY		A. E.				A. E.	

# 414 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\gamma$ Microscopii. Mag. 4.7		$\theta$ Capricorni. Mag. 4.2		61 Cygni (1st star). Mag. 5.6	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 20 <sup>m</sup> 56	<sup>°</sup> 32 <sup>'</sup> 33	<sup>h</sup> 21 <sup>m</sup> 1	<sup>°</sup> 17 <sup>'</sup> 32	<sup>h</sup> 21 <sup>m</sup> 3	<sup>°</sup> 38 <sup>'</sup> 21
Jan. 1.1	29.417 <sup>s</sup>	48.15 <sup>s</sup> 83	32.889 <sup>s</sup>	34.53 <sup>s</sup> 4	23.061 <sup>s</sup>	68.34 <sup>s</sup> 243
11.1	29.418 <sup>40</sup>	47.32 <sup>97</sup>	32.888 <sup>32</sup>	34.57 <sup>7</sup>	23.009 <sup>12</sup>	65.91 <sup>258</sup>
21.0	29.458 <sup>78</sup>	46.35 <sup>111</sup>	32.920 <sup>65</sup>	34.50 <sup>18</sup>	22.997 <sup>32</sup>	63.33 <sup>264</sup>
31.0	29.536 <sup>114</sup>	45.24 <sup>123</sup>	32.985 <sup>98</sup>	34.32 <sup>31</sup>	23.029 <sup>76</sup>	60.69 <sup>263</sup>
Feb. 10.0	29.650 <sup>151</sup>	44.01 <sup>133</sup>	33.083 <sup>127</sup>	34.01 <sup>45</sup>	23.105 <sup>121</sup>	58.06 <sup>244</sup>
20.0	29.801 <sup>184</sup>	42.68 <sup>141</sup>	33.210 <sup>159</sup>	33.56 <sup>61</sup>	23.226 <sup>165</sup>	55.62 <sup>218</sup>
Mar. 1.9	29.985 <sup>215</sup>	41.27 <sup>149</sup>	33.369 <sup>187</sup>	32.95 <sup>76</sup>	23.391 <sup>206</sup>	53.44 <sup>186</sup>
11.9	30.200 <sup>246</sup>	39.78 <sup>153</sup>	33.556 <sup>215</sup>	32.19 <sup>92</sup>	23.597 <sup>244</sup>	51.58 <sup>141</sup>
21.9	30.446 <sup>272</sup>	38.25 <sup>156</sup>	33.771 <sup>240</sup>	31.27 <sup>108</sup>	23.841 <sup>279</sup>	50.17 <sup>92</sup>
31.8	30.718 <sup>297</sup>	36.69 <sup>156</sup>	34.011 <sup>263</sup>	30.19 <sup>121</sup>	24.120 <sup>308</sup>	49.25 <sup>37</sup>
Apr. 10.8	31.015 <sup>318</sup>	35.13 <sup>153</sup>	34.274 <sup>283</sup>	28.98 <sup>133</sup>	24.428 <sup>330</sup>	48.88 <sup>18</sup>
20.8	31.333 <sup>334</sup>	33.60 <sup>145</sup>	34.557 <sup>299</sup>	27.65 <sup>140</sup>	24.758 <sup>347</sup>	49.06 <sup>73</sup>
30.8	31.667 <sup>343</sup>	32.15 <sup>134</sup>	34.856 <sup>308</sup>	26.25 <sup>146</sup>	25.105 <sup>351</sup>	49.79 <sup>124</sup>
May 10.7	32.010 <sup>347</sup>	30.81 <sup>119</sup>	35.164 <sup>312</sup>	24.79 <sup>144</sup>	25.456 <sup>352</sup>	51.03 <sup>172</sup>
20.7	32.357 <sup>342</sup>	29.62 <sup>102</sup>	35.476 <sup>309</sup>	23.35 <sup>142</sup>	25.808 <sup>341</sup>	52.75 <sup>216</sup>
30.7	32.699 <sup>330</sup>	28.60 <sup>80</sup>	35.785 <sup>299</sup>	21.93 <sup>132</sup>	26.149 <sup>322</sup>	54.91 <sup>252</sup>
June 9.7	33.029 <sup>308</sup>	27.80 <sup>57</sup>	36.084 <sup>279</sup>	20.61 <sup>120</sup>	26.471 <sup>297</sup>	57.43 <sup>283</sup>
19.6	33.337 <sup>280</sup>	27.23 <sup>31</sup>	36.363 <sup>255</sup>	19.41 <sup>104</sup>	26.768 <sup>260</sup>	60.26 <sup>303</sup>
29.6	33.617 <sup>244</sup>	26.92 <sup>5</sup>	36.618 <sup>222</sup>	18.37 <sup>84</sup>	27.028 <sup>218</sup>	63.29 <sup>318</sup>
July 9.6	33.861 <sup>200</sup>	26.87 <sup>21</sup>	36.840 <sup>184</sup>	17.53 <sup>66</sup>	27.246 <sup>173</sup>	66.47 <sup>323</sup>
19.5	34.061 <sup>152</sup>	27.08 <sup>44</sup>	37.024 <sup>141</sup>	16.87 <sup>44</sup>	27.419 <sup>122</sup>	69.70 <sup>321</sup>
29.5	34.213 <sup>101</sup>	27.52 <sup>67</sup>	37.165 <sup>95</sup>	16.43 <sup>23</sup>	27.541 <sup>68</sup>	72.91 <sup>314</sup>
Aug. 8.5	34.314 <sup>48</sup>	28.19 <sup>84</sup>	37.260 <sup>48</sup>	16.20 <sup>2</sup>	27.609 <sup>17</sup>	76.05 <sup>299</sup>
18.5	34.362 <sup>5</sup>	29.03 <sup>99</sup>	37.308 <sup>1</sup>	16.18 <sup>15</sup>	27.626 <sup>35</sup>	79.04 <sup>278</sup>
28.4	34.357 <sup>55</sup>	30.02 <sup>107</sup>	37.309 <sup>43</sup>	16.33 <sup>31</sup>	27.591 <sup>81</sup>	81.82 <sup>253</sup>
Sept. 7.4	34.302 <sup>100</sup>	31.09 <sup>112</sup>	37.266 <sup>84</sup>	16.64 <sup>43</sup>	27.510 <sup>125</sup>	84.35 <sup>221</sup>
17.4	34.202 <sup>138</sup>	32.21 <sup>110</sup>	37.182 <sup>116</sup>	17.07 <sup>53</sup>	27.385 <sup>160</sup>	86.56 <sup>187</sup>
27.4	34.064 <sup>168</sup>	33.31 <sup>102</sup>	37.066 <sup>142</sup>	17.60 <sup>57</sup>	27.225 <sup>189</sup>	88.43 <sup>147</sup>
Oct. 7.3	33.896 <sup>187</sup>	34.33 <sup>91</sup>	36.924 <sup>160</sup>	18.17 <sup>60</sup>	27.036 <sup>207</sup>	89.90 <sup>107</sup>
17.3	33.709 <sup>195</sup>	35.24 <sup>75</sup>	36.764 <sup>166</sup>	18.77 <sup>60</sup>	26.829 <sup>220</sup>	90.97 <sup>62</sup>
27.3	33.514 <sup>194</sup>	35.99 <sup>55</sup>	36.598 <sup>166</sup>	19.37 <sup>56</sup>	26.609 <sup>221</sup>	91.59 <sup>15</sup>
Nov. 6.2	33.320 <sup>182</sup>	36.54 <sup>35</sup>	36.432 <sup>156</sup>	19.93 <sup>51</sup>	26.388 <sup>216</sup>	91.74 <sup>30</sup>
16.2	33.138 <sup>161</sup>	36.89 <sup>12</sup>	36.276 <sup>138</sup>	20.44 <sup>45</sup>	26.172 <sup>199</sup>	91.44 <sup>77</sup>
26.2	32.977 <sup>133</sup>	37.01 <sup>10</sup>	36.138 <sup>115</sup>	20.89 <sup>37</sup>	25.973 <sup>177</sup>	90.67 <sup>121</sup>
Dec. 6.2	32.844 <sup>100</sup>	36.91 <sup>31</sup>	36.023 <sup>87</sup>	21.26 <sup>29</sup>	25.796 <sup>149</sup>	89.46 <sup>163</sup>
16.1	32.744 <sup>63</sup>	36.60 <sup>51</sup>	35.936 <sup>55</sup>	21.55 <sup>21</sup>	25.647 <sup>116</sup>	87.83 <sup>199</sup>
26.1	32.681 <sup>23</sup>	36.09 <sup>70</sup>	35.881 <sup>22</sup>	21.76 <sup>12</sup>	25.531 <sup>77</sup>	85.84 <sup>231</sup>
36.1	32.658	35.39	35.859	21.88	25.454	83.53
Mean Place	30.687	48.84	33.876	37.57	23.893	54.25
Sec $\delta$ , Tan $\delta$	1.187	-0.639	1.049	-0.316	1.275	+0.792
L $\alpha$ , L $\delta$	+0.01	+0.3	+0.01	+0.3	-0.01	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.03	-0.7	+0.02	-0.7	-0.04	-0.7

AUTHORITY

A. E.

APPARENT PLACES OF STARS, 1922. 415

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		ζ Cygni. Mag. 3.4		α Equulei. Mag. 4.1		θ <sup>1</sup> Microscopii. Mag. 4.9	
		R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
		<sup>h</sup> 21 <sup>m</sup> 9	<sup>°</sup> 29 <sup>'</sup> 54	<sup>h</sup> 21 <sup>m</sup> 11	<sup>°</sup> 4 <sup>'</sup> 55	<sup>h</sup> 21 <sup>m</sup> 15	<sup>°</sup> 41 <sup>'</sup> 7
Jan.	1.1	36.204 <sup>s</sup> <sub>50</sub>	35.26 <sup>s</sup> <sub>223</sub>	54.752 <sup>s</sup> <sub>19</sub>	36.00 <sup>s</sup> <sub>121</sub>	45.226 <sup>s</sup> <sub>29</sub>	85.79 <sup>s</sup> <sub>125</sub>
	11.1	36.154 <sup>s</sup> <sub>16</sub>	33.03 <sup>s</sup> <sub>237</sub>	54.733 <sup>s</sup> <sub>10</sub>	34.79 <sup>s</sup> <sub>121</sub>	45.197 <sup>s</sup> <sub>14</sub>	84.54 <sup>s</sup> <sub>147</sub>
	21.0	36.138 <sup>s</sup> <sub>23</sub>	30.66 <sup>s</sup> <sub>240</sub>	54.743 <sup>s</sup> <sub>44</sub>	33.58 <sup>s</sup> <sub>117</sub>	45.211 <sup>s</sup> <sub>56</sub>	83.07 <sup>s</sup> <sub>163</sub>
	31.0	36.161 <sup>s</sup> <sub>60</sub>	28.26 <sup>s</sup> <sub>236</sub>	54.787 <sup>s</sup> <sub>73</sub>	32.41 <sup>s</sup> <sub>106</sub>	45.267 <sup>s</sup> <sub>98</sub>	81.44 <sup>s</sup> <sub>177</sub>
Feb.	10.0	36.221 <sup>s</sup> <sub>102</sub>	25.90 <sup>s</sup> <sub>220</sub>	54.860 <sup>s</sup> <sub>105</sub>	31.35 <sup>s</sup> <sub>88</sub>	45.365 <sup>s</sup> <sub>139</sub>	79.67 <sup>s</sup> <sub>188</sub>
	20.0	36.323 <sup>s</sup> <sub>139</sub>	23.70 <sup>s</sup> <sub>195</sub>	54.965 <sup>s</sup> <sub>134</sub>	30.47 <sup>s</sup> <sub>67</sub>	45.504 <sup>s</sup> <sub>178</sub>	77.79 <sup>s</sup> <sub>196</sub>
Mar.	1.9	36.462 <sup>s</sup> <sub>175</sub>	21.75 <sup>s</sup> <sub>163</sub>	55.099 <sup>s</sup> <sub>165</sub>	29.80 <sup>s</sup> <sub>41</sub>	45.682 <sup>s</sup> <sub>214</sub>	75.83 <sup>s</sup> <sub>199</sub>
	11.9	36.637 <sup>s</sup> <sub>211</sub>	20.12 <sup>s</sup> <sub>125</sub>	55.264 <sup>s</sup> <sub>195</sub>	29.39 <sup>s</sup> <sub>13</sub>	45.896 <sup>s</sup> <sub>250</sub>	73.84 <sup>s</sup> <sub>200</sub>
	21.9	36.848 <sup>s</sup> <sub>245</sub>	18.87 <sup>s</sup> <sub>76</sub>	55.459 <sup>s</sup> <sub>220</sub>	29.26 <sup>s</sup> <sub>21</sub>	46.146 <sup>s</sup> <sub>284</sub>	71.84 <sup>s</sup> <sub>197</sub>
	31.8	37.093 <sup>s</sup> <sub>266</sub>	18.11 <sup>s</sup> <sub>29</sub>	55.679 <sup>s</sup> <sub>244</sub>	29.47 <sup>s</sup> <sub>54</sub>	46.430 <sup>s</sup> <sub>313</sub>	69.87 <sup>s</sup> <sub>191</sub>
Apr.	10.8	37.359 <sup>s</sup> <sub>294</sub>	17.82 <sup>s</sup> <sub>19</sub>	55.923 <sup>s</sup> <sub>265</sub>	30.01 <sup>s</sup> <sub>86</sub>	46.743 <sup>s</sup> <sub>338</sub>	67.96 <sup>s</sup> <sub>179</sub>
	20.8	37.653 <sup>s</sup> <sub>310</sub>	18.01 <sup>s</sup> <sub>72</sub>	56.188 <sup>s</sup> <sub>282</sub>	30.87 <sup>s</sup> <sub>115</sub>	47.081 <sup>s</sup> <sub>359</sub>	66.17 <sup>s</sup> <sub>165</sub>
	30.8	37.963 <sup>s</sup> <sub>319</sub>	18.73 <sup>s</sup> <sub>117</sub>	56.470 <sup>s</sup> <sub>293</sub>	32.02 <sup>s</sup> <sub>142</sub>	47.440 <sup>s</sup> <sub>374</sub>	64.52 <sup>s</sup> <sub>147</sub>
May	10.7	38.282 <sup>s</sup> <sub>324</sub>	19.90 <sup>s</sup> <sub>159</sub>	56.763 <sup>s</sup> <sub>296</sub>	33.44 <sup>s</sup> <sub>164</sub>	47.814 <sup>s</sup> <sub>381</sub>	63.05 <sup>s</sup> <sub>123</sub>
	20.7	38.606 <sup>s</sup> <sub>314</sub>	21.49 <sup>s</sup> <sub>200</sub>	57.059 <sup>s</sup> <sub>295</sub>	35.08 <sup>s</sup> <sub>181</sub>	48.195 <sup>s</sup> <sub>379</sub>	61.82 <sup>s</sup> <sub>98</sub>
	30.7	38.920 <sup>s</sup> <sub>300</sub>	23.49 <sup>s</sup> <sub>231</sub>	57.354 <sup>s</sup> <sub>285</sub>	36.89 <sup>s</sup> <sub>194</sub>	48.574 <sup>s</sup> <sub>369</sub>	60.84 <sup>s</sup> <sub>70</sub>
June	9.7	39.220 <sup>s</sup> <sub>279</sub>	25.80 <sup>s</sup> <sub>256</sub>	57.639 <sup>s</sup> <sub>267</sub>	38.83 <sup>s</sup> <sub>199</sub>	48.943 <sup>s</sup> <sub>349</sub>	60.14 <sup>s</sup> <sub>38</sub>
	19.6	39.499 <sup>s</sup> <sub>248</sub>	28.36 <sup>s</sup> <sub>274</sub>	57.906 <sup>s</sup> <sub>242</sub>	40.82 <sup>s</sup> <sub>200</sub>	49.292 <sup>s</sup> <sub>321</sub>	59.76 <sup>s</sup> <sub>7</sub>
	29.6	39.747 <sup>s</sup> <sub>210</sub>	31.10 <sup>s</sup> <sub>284</sub>	58.148 <sup>s</sup> <sub>212</sub>	42.82 <sup>s</sup> <sub>196</sub>	49.613 <sup>s</sup> <sub>284</sub>	59.69 <sup>s</sup> <sub>26</sub>
July	9.6	39.957 <sup>s</sup> <sub>171</sub>	33.94 <sup>s</sup> <sub>288</sub>	58.360 <sup>s</sup> <sub>175</sub>	44.78 <sup>s</sup> <sub>186</sub>	49.897 <sup>s</sup> <sub>239</sub>	59.95 <sup>s</sup> <sub>55</sub>
	19.5	40.128 <sup>s</sup> <sub>125</sub>	36.82 <sup>s</sup> <sub>285</sub>	58.535 <sup>s</sup> <sub>136</sub>	46.64 <sup>s</sup> <sub>171</sub>	50.136 <sup>s</sup> <sub>188</sub>	60.50 <sup>s</sup> <sub>85</sub>
	29.5	40.253 <sup>s</sup> <sub>76</sub>	39.67 <sup>s</sup> <sub>277</sub>	58.671 <sup>s</sup> <sub>92</sub>	48.35 <sup>s</sup> <sub>156</sub>	50.324 <sup>s</sup> <sub>132</sub>	61.35 <sup>s</sup> <sub>109</sub>
Aug.	8.5	40.329 <sup>s</sup> <sub>28</sub>	42.44 <sup>s</sup> <sub>260</sub>	58.763 <sup>s</sup> <sub>45</sub>	49.91 <sup>s</sup> <sub>135</sub>	50.456 <sup>s</sup> <sub>73</sub>	62.44 <sup>s</sup> <sub>130</sub>
	18.5	40.357 <sup>s</sup> <sub>19</sub>	45.04 <sup>s</sup> <sub>238</sub>	58.808 <sup>s</sup> <sub>4</sub>	51.26 <sup>s</sup> <sub>115</sub>	50.529 <sup>s</sup> <sub>15</sub>	63.74 <sup>s</sup> <sub>145</sub>
	28.4	40.338 <sup>s</sup> <sub>67</sub>	47.42 <sup>s</sup> <sub>217</sub>	58.812 <sup>s</sup> <sub>38</sub>	52.41 <sup>s</sup> <sub>93</sub>	50.544 <sup>s</sup> <sub>42</sub>	65.19 <sup>s</sup> <sub>153</sub>
Sept.	7.4	40.271 <sup>s</sup> <sub>105</sub>	49.59 <sup>s</sup> <sub>184</sub>	58.774 <sup>s</sup> <sub>76</sub>	53.34 <sup>s</sup> <sub>69</sub>	50.502 <sup>s</sup> <sub>95</sub>	66.72 <sup>s</sup> <sub>155</sub>
	17.4	40.166 <sup>s</sup> <sub>137</sub>	51.43 <sup>s</sup> <sub>153</sub>	58.698 <sup>s</sup> <sub>106</sub>	54.03 <sup>s</sup> <sub>46</sub>	50.407 <sup>s</sup> <sub>139</sub>	68.27 <sup>s</sup> <sub>151</sub>
	27.4	40.029 <sup>s</sup> <sub>164</sub>	52.96 <sup>s</sup> <sub>121</sub>	58.592 <sup>s</sup> <sub>132</sub>	54.49 <sup>s</sup> <sub>26</sub>	50.268 <sup>s</sup> <sub>176</sub>	69.78 <sup>s</sup> <sub>139</sub>
Oct.	7.3	39.865 <sup>s</sup> <sub>186</sub>	54.17 <sup>s</sup> <sub>81</sub>	58.460 <sup>s</sup> <sub>149</sub>	54.75 <sup>s</sup> <sub>3</sub>	50.092 <sup>s</sup> <sub>202</sub>	71.17 <sup>s</sup> <sub>121</sub>
	17.3	39.679 <sup>s</sup> <sub>196</sub>	54.98 <sup>s</sup> <sub>45</sub>	58.311 <sup>s</sup> <sub>157</sub>	54.78 <sup>s</sup> <sub>15</sub>	49.890 <sup>s</sup> <sub>217</sub>	72.38 <sup>s</sup> <sub>98</sub>
	27.3	39.483 <sup>s</sup> <sub>198</sub>	55.43 <sup>s</sup> <sub>0</sub>	58.154 <sup>s</sup> <sub>158</sub>	54.63 <sup>s</sup> <sub>36</sub>	49.673 <sup>s</sup> <sub>220</sub>	73.36 <sup>s</sup> <sub>70</sub>
Nov.	6.2	39.285 <sup>s</sup> <sub>193</sub>	55.43 <sup>s</sup> <sub>39</sub>	57.996 <sup>s</sup> <sub>151</sub>	54.27 <sup>s</sup> <sub>57</sub>	49.453 <sup>s</sup> <sub>213</sub>	74.06 <sup>s</sup> <sub>41</sub>
	16.2	39.092 <sup>s</sup> <sub>178</sub>	55.04 <sup>s</sup> <sub>80</sub>	57.845 <sup>s</sup> <sub>138</sub>	53.70 <sup>s</sup> <sub>73</sub>	49.240 <sup>s</sup> <sub>194</sub>	74.47 <sup>s</sup> <sub>9</sub>
	26.2	38.914 <sup>s</sup> <sub>160</sub>	54.24 <sup>s</sup> <sub>117</sub>	57.707 <sup>s</sup> <sub>120</sub>	52.97 <sup>s</sup> <sub>88</sub>	49.046 <sup>s</sup> <sub>168</sub>	74.56 <sup>s</sup> <sub>24</sub>
Dec.	6.2	38.754 <sup>s</sup> <sub>136</sub>	53.07 <sup>s</sup> <sub>155</sub>	57.587 <sup>s</sup> <sub>93</sub>	52.09 <sup>s</sup> <sub>102</sub>	48.878 <sup>s</sup> <sub>134</sub>	74.32 <sup>s</sup> <sub>53</sub>
	16.1	38.618 <sup>s</sup> <sub>106</sub>	51.52 <sup>s</sup> <sub>184</sub>	57.494 <sup>s</sup> <sub>67</sub>	51.07 <sup>s</sup> <sub>112</sub>	48.744 <sup>s</sup> <sub>97</sub>	73.79 <sup>s</sup> <sub>83</sub>
	26.1	38.512 <sup>s</sup> <sub>74</sub>	49.68 <sup>s</sup> <sub>212</sub>	57.427 <sup>s</sup> <sub>39</sub>	49.95 <sup>s</sup> <sub>120</sub>	48.647 <sup>s</sup> <sub>54</sub>	72.96 <sup>s</sup> <sub>109</sub>
	36.1	38.438 <sup>s</sup>	47.56 <sup>s</sup>	57.388 <sup>s</sup>	48.75 <sup>s</sup>	48.593 <sup>s</sup>	71.87 <sup>s</sup>
Mean Place		36.937	22.47	55.501	28.60	46.682	83.87
Sec δ, Tan δ		1.154	+0.575	1.004	+0.086	1.328	-0.873
L α, L δ		-0.01	+0.3	0.00	+0.3	+0.02	+0.3
ω α, ω δ		-0.03	-0.7	0.00	-0.7	+0.04	-0.7
AUTHORITY		A. E.		A. E.		A. N.	

# 416 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\alpha$ Cephei. Mag. 2.6		$\iota$ Capricorni. Mag. 4.3		$\gamma$ Pavonis. Mag. 4.3		
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. S.	
	<sup>h</sup> <sup>m</sup> 21 16	<sup>°</sup> <sup>'</sup> 62 15	<sup>h</sup> <sup>m</sup> 21 17	<sup>°</sup> <sup>'</sup> 17 9	<sup>h</sup> <sup>m</sup> 21 19	<sup>°</sup> <sup>'</sup> 65 42	
Jan.	1.1 11.1 21.1 31.0	41.99 <sup>22</sup> 41.77 <sup>15</sup> 41.62 <sup>6</sup> 41.56 <sup>1</sup>	35.50 <sup>273</sup> 32.77 <sup>300</sup> 29.77 <sup>323</sup> 26.54 <sup>328</sup>	53.438 <sup>16</sup> 53.422 <sup>16</sup> 53.438 <sup>47</sup> 53.485 <sup>80</sup>	60.79 <sup>5</sup> 60.84 <sup>5</sup> 60.79 <sup>19</sup> 60.60 <sup>32</sup>	57.71 <sup>13</sup> 57.58 <sup>4</sup> 57.54 <sup>4</sup> 57.58 <sup>13</sup>	78.71 <sup>244</sup> 76.27 <sup>272</sup> 73.55 <sup>291</sup> 70.64 <sup>302</sup>
Feb.	10.0 20.0	41.57 <sup>9</sup> 41.66 <sup>18</sup>	23.26 <sup>321</sup> 20.05 <sup>303</sup>	53.565 <sup>110</sup> 53.675 <sup>141</sup>	60.28 <sup>47</sup> 59.81 <sup>63</sup>	57.71 <sup>20</sup> 57.91 <sup>29</sup>	67.62 <sup>307</sup> 64.55 <sup>305</sup>
Mar.	2.0 11.9 21.9 31.9	41.84 <sup>25</sup> 42.09 <sup>33</sup> 42.42 <sup>39</sup> 42.81 <sup>44</sup>	17.02 <sup>273</sup> 14.29 <sup>230</sup> 11.99 <sup>180</sup> 10.19 <sup>126</sup>	53.816 <sup>171</sup> 53.987 <sup>200</sup> 54.187 <sup>228</sup> 54.415 <sup>253</sup>	59.18 <sup>80</sup> 58.38 <sup>97</sup> 57.41 <sup>113</sup> 56.28 <sup>129</sup>	58.20 <sup>35</sup> 58.55 <sup>42</sup> 58.97 <sup>48</sup> 59.45 <sup>53</sup>	61.50 <sup>296</sup> 58.54 <sup>281</sup> 55.73 <sup>261</sup> 53.12 <sup>235</sup>
Apr.	10.8 20.8 30.8	43.25 <sup>49</sup> 43.74 <sup>51</sup> 44.25 <sup>52</sup>	8.93 <sup>62</sup> 8.31 <sup>5</sup> 8.26 <sup>61</sup>	54.668 <sup>275</sup> 54.943 <sup>293</sup> 55.236 <sup>305</sup>	54.99 <sup>139</sup> 53.60 <sup>149</sup> 52.11 <sup>154</sup>	59.98 <sup>57</sup> 60.55 <sup>61</sup> 61.16 <sup>63</sup>	50.77 <sup>204</sup> 48.73 <sup>169</sup> 47.04 <sup>131</sup>
May	10.8 20.7 30.7	44.77 <sup>52</sup> 45.29 <sup>51</sup> 45.80 <sup>46</sup>	8.87 <sup>119</sup> 10.06 <sup>175</sup> 11.81 <sup>223</sup>	55.541 <sup>312</sup> 55.853 <sup>312</sup> 56.165 <sup>303</sup>	50.57 <sup>153</sup> 49.04 <sup>151</sup> 47.53 <sup>142</sup>	61.79 <sup>63</sup> 62.42 <sup>64</sup> 63.06 <sup>61</sup>	45.73 <sup>88</sup> 44.85 <sup>46</sup> 44.39 <sup>1</sup>
June	9.7 19.7 29.6	46.26 <sup>42</sup> 46.68 <sup>37</sup> 47.05 <sup>30</sup>	14.04 <sup>265</sup> 16.69 <sup>303</sup> 19.72 <sup>329</sup>	56.468 <sup>288</sup> 56.756 <sup>264</sup> 57.020 <sup>234</sup>	46.11 <sup>130</sup> 44.81 <sup>112</sup> 43.69 <sup>95</sup>	63.67 <sup>58</sup> 64.25 <sup>53</sup> 64.78 <sup>46</sup>	44.38 <sup>46</sup> 44.84 <sup>88</sup> 45.72 <sup>129</sup>
July	9.6 19.6 29.5	47.35 <sup>23</sup> 47.58 <sup>15</sup> 47.73 <sup>6</sup>	23.01 <sup>348</sup> 26.49 <sup>357</sup> 30.06 <sup>360</sup>	57.254 <sup>197</sup> 57.451 <sup>155</sup> 57.606 <sup>111</sup>	42.74 <sup>74</sup> 42.00 <sup>51</sup> 41.49 <sup>30</sup>	65.24 <sup>39</sup> 65.63 <sup>30</sup> 65.93 <sup>21</sup>	47.01 <sup>164</sup> 48.65 <sup>197</sup> 50.62 <sup>225</sup>
Aug.	8.5 18.5 28.5	47.79 <sup>1</sup> 47.78 <sup>10</sup> 47.68 <sup>16</sup>	33.66 <sup>356</sup> 37.22 <sup>340</sup> 40.62 <sup>320</sup>	57.717 <sup>63</sup> 57.780 <sup>17</sup> 57.797 <sup>28</sup>	41.19 <sup>7</sup> 41.12 <sup>12</sup> 41.24 <sup>29</sup>	66.14 <sup>10</sup> 66.24 <sup>1</sup> 66.25 <sup>10</sup>	52.87 <sup>240</sup> 55.27 <sup>250</sup> 57.77 <sup>249</sup>
Sept.	7.4 17.4 27.4	47.52 <sup>24</sup> 47.28 <sup>30</sup> 46.98 <sup>35</sup>	43.82 <sup>294</sup> 46.76 <sup>263</sup> 49.39 <sup>221</sup>	57.769 <sup>68</sup> 57.701 <sup>105</sup> 57.596 <sup>131</sup>	41.53 <sup>44</sup> 41.97 <sup>54</sup> 42.51 <sup>60</sup>	66.15 <sup>20</sup> 65.95 <sup>28</sup> 65.67 <sup>35</sup>	60.26 <sup>239</sup> 62.65 <sup>219</sup> 64.84 <sup>190</sup>
Oct.	7.4 17.3 27.3	46.63 <sup>39</sup> 46.24 <sup>41</sup> 45.83 <sup>43</sup>	51.60 <sup>176</sup> 53.36 <sup>128</sup> 54.64 <sup>72</sup>	57.465 <sup>151</sup> 57.314 <sup>161</sup> 57.153 <sup>162</sup>	43.11 <sup>65</sup> 43.76 <sup>64</sup> 44.40 <sup>62</sup>	65.32 <sup>40</sup> 64.92 <sup>44</sup> 64.48 <sup>45</sup>	66.74 <sup>155</sup> 68.29 <sup>113</sup> 69.42 <sup>62</sup>
Nov.	6.3 16.2 26.2	45.40 <sup>44</sup> 44.96 <sup>43</sup> 44.53 <sup>40</sup>	55.36 <sup>19</sup> 55.55 <sup>41</sup> 55.14 <sup>100</sup>	56.991 <sup>156</sup> 56.835 <sup>142</sup> 56.693 <sup>121</sup>	45.02 <sup>57</sup> 45.59 <sup>50</sup> 46.09 <sup>42</sup>	64.03 <sup>45</sup> 63.58 <sup>42</sup> 63.16 <sup>38</sup>	70.04 <sup>12</sup> 70.16 <sup>42</sup> 69.74 <sup>89</sup>
Dec.	6.2 16.2 26.1 36.1	44.13 <sup>36</sup> 43.77 <sup>32</sup> 43.45 <sup>26</sup> 43.19	54.14 <sup>150</sup> 52.64 <sup>202</sup> 50.62 <sup>251</sup> 48.11	56.572 <sup>95</sup> 56.477 <sup>67</sup> 56.410 <sup>36</sup> 56.374	46.51 <sup>34</sup> 46.85 <sup>24</sup> 47.09 <sup>15</sup> 47.24	62.78 <sup>32</sup> 62.46 <sup>25</sup> 62.21 <sup>17</sup> 62.04	68.85 <sup>142</sup> 67.43 <sup>186</sup> 65.57 <sup>223</sup> 63.34
Mean Place Sec $\delta$ , Tan $\delta$	43.20 2.148	17.01 +1.901	54.369 1.047	63.15 -0.309	60.85 2.432	73.62 -2.217	
L $\alpha$ , L $\delta$ $\omega$ $\alpha$ , $\omega$ $\delta$	-0.03 -0.10	+0.3 -0.7	+0.01 +0.02	+0.3 -0.7	+0.04 +0.11	+0.3 -0.6	
AUTHORITY	A. E.		A. E.		A. E.		

# APPARENT PLACES OF STARS, 1922. 417

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ζ Capricorni. Mag. 3·9		β Aquarii. Mag. 3·1		β Cephei. Mag. 3·3	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
	h m 21 22	° ' 22 44	h m 21 27	° ' 5 54	h m 21 27	° ' 70 12
Jan. 1 1	12·041 <sup>s</sup> 23	58·98 <sup>s</sup> 24	26·469 <sup>s</sup> 25	49·89 <sup>s</sup> 66	38·15 <sup>s</sup> 37	84·91 <sup>s</sup> 259
11·1	12·018 11	58·74 39	26·444 2	50·55 59	37·78 27	82·32 293
21·1	12·029 45	58·35 56	26·446 34	51·14 48	37·51 16	79·39 320
31·0	12·074 77	57·79 66	26·480 63	51·62 36	37·35 5	76·19 332
Feb. 10·0	12·151 110	57·13 83	26·543 96	51·98 20	37·30 7	72·87 331
20·0	12·261 141	56·30 97	26·639 122	52·18 0	37·37 19	69·56 319
Mar. 2·0	12·402 173	55·33 112	26·761 156	52·18 20	37·56 30	66·37 292
11·9	12·575 205	54·21 126	26·917 182	51·98 43	37·86 40	63·45 253
21·9	12·780 231	52·95 140	27·099 213	51·55 70	38·26 50	60·92 205
31·9	13·011 259	51·55 147	27·312 236	50·85 93	38·76 57	58·87 152
Apr. 10·8	13·270 281	50·08 154	27·548 261	49·92 115	39·33 64	57·35 93
20·8	13·551 301	48·54 155	27·809 281	48·77 135	39·97 67	56·42 34
30·8	13·852 315	46·99 158	28·090 293	47·42 151	40·64 69	56·08 31
May 10·8	14·167 322	45·41 150	28·383 299	45·91 161	41·33 68	56·39 92
20·7	14·489 321	43·91 144	28·682 302	44·30 173	42·01 66	57·31 151
30·7	14·810 313	42·47 128	28·984 293	42·57 172	42·67 62	58·82 202
June 9·7	15·123 299	41·19 111	29·277 279	40·85 169	43·29 56	60·84 249
19·7	15·422 275	40·08 92	29·556 256	39·16 165	43·85 49	63·33 288
29·6	15·697 245	39·16 67	29·812 231	37·51 151	44·34 40	66·21 321
July 9·6	15·942 206	38·49 48	30·043 193	36·00 133	44·74 30	69·42 343
19·6	16·148 167	38·01 20	30·236 154	34·67 119	45·04 20	72·85 359
29·5	16·315 119	37·81 1	30·390 112	33·48 96	45·24 9	76·44 365
Aug. 8·5	16·434 70	37·82 25	30·502 67	32·52 77	45·33 2	80·09 365
18·5	16·504 22	38·07 46	30·569 26	31·75 56	45·31 13	83·74 356
28·5	16·526 24	38·53 58	30·595 21	31·19 34	45·18 22	87·30 338
Sept. 7·4	16·502 69	39·11 72	30·574 57	30·85 14	44·96 32	90·68 317
17·4	16·433 102	39·83 80	30·517 96	30·71 3	44·64 41	93·85 284
27·4	16·331 135	40·63 82	30·421 117	30·74 16	44·23 47	96·69 250
Oct. 7·4	16·196 153	41·45 81	30·304 139	30·90 30	43·76 54	99·19 205
17·3	16·043 166	42·26 78	30·165 151	31·20 43	43·22 58	101·24 157
27·3	15·877 169	43·04 68	30·014 153	31·63 50	42·64 61	102·81 105
Nov. 6·3	15·708 165	43·72 60	29·861 148	32·13 59	42·03 62	103·86 49
16·2	15·543 149	44·32 41	29·713 137	32·72 63	41·41 62	104·35 11
26·2	15·394 129	44·73 31	29·576 120	33·35 67	40·79 60	104·24 73
Dec. 6·2	15·265 101	45·04 17	29·456 97	34·02 69	40·19 55	103·51 127
16·2	15·164 75	45·21 1	29·359 71	34·71 69	39·64 50	102·24 184
26·1	15·089 41	45·22 13	29·288 45	35·40 69	39·14 42	100·40 234
36·1	15·048	45·09	29·243	36·09	38·72	98·06
Mean Place	13·041	59·94	27·240	54·37	39·65	65·13
Sec δ, Tan δ	1·084	—0·419	1·005	—0·104	2·955	+2·780
L α, L δ	+0·01	+0·3	0·00	+0·3	—0·05	+0·3
ω α, ω δ	+0·02	—0·6	+0·01	—0·6	—0·15	—0·6
AUTHORITY	A. E.		A. E.		A. E.	

## 418 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ξ Aquarii. Mag. 4.8		ε Pegasi. Mag. 2.5		δ Capricorni. Mag. 3.0	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 21	<sup>m</sup> 33	<sup>h</sup> 21	<sup>m</sup> 40	<sup>h</sup> 21	<sup>m</sup> 42
	<sup>s</sup>	<sup>°</sup> 8	<sup>s</sup>	<sup>°</sup> 9	<sup>s</sup>	<sup>°</sup> 16
	33	11	40	30	42	28
Jan. 1.1	35.297 <sup>29</sup>	73.25 <sup>51</sup>	20.679 <sup>45</sup>	68.09 <sup>131</sup>	43.435 <sup>38</sup>	53.66 <sup>11</sup>
11.1	35.268 <sup>1</sup>	73.76 <sup>45</sup>	20.634 <sup>19</sup>	66.78 <sup>139</sup>	43.397 <sup>9</sup>	53.77 <sup>2</sup>
21.1	35.267 <sup>28</sup>	74.21 <sup>34</sup>	20.615 <sup>12</sup>	65.39 <sup>134</sup>	43.388 <sup>22</sup>	53.75 <sup>14</sup>
31.0	35.295 <sup>59</sup>	74.55 <sup>21</sup>	20.627 <sup>43</sup>	64.05 <sup>124</sup>	43.410 <sup>54</sup>	53.61 <sup>32</sup>
Feb. 10.0	35.354 <sup>88</sup>	74.76 <sup>6</sup>	20.670 <sup>74</sup>	62.81 <sup>113</sup>	43.464 <sup>83</sup>	53.29 <sup>48</sup>
20.0	35.442 <sup>119</sup>	74.82 <sup>13</sup>	20.744 <sup>106</sup>	61.68 <sup>89</sup>	43.547 <sup>114</sup>	52.81 <sup>66</sup>
Mar. 2.0	35.561 <sup>150</sup>	74.69 <sup>35</sup>	20.850 <sup>139</sup>	60.79 <sup>64</sup>	43.661 <sup>147</sup>	52.15 <sup>84</sup>
11.9	35.711 <sup>179</sup>	74.34 <sup>56</sup>	20.989 <sup>170</sup>	60.15 <sup>36</sup>	43.808 <sup>177</sup>	51.31 <sup>101</sup>
21.9	35.890 <sup>208</sup>	73.78 <sup>80</sup>	21.159 <sup>201</sup>	59.79 <sup>1</sup>	43.985 <sup>208</sup>	50.30 <sup>118</sup>
31.9	36.098 <sup>235</sup>	72.98 <sup>103</sup>	21.360 <sup>230</sup>	59.78 <sup>34</sup>	44.193 <sup>234</sup>	49.12 <sup>135</sup>
Apr. 10.9	36.333 <sup>259</sup>	71.95 <sup>123</sup>	21.590 <sup>253</sup>	60.12 <sup>70</sup>	44.427 <sup>262</sup>	47.77 <sup>148</sup>
20.8	36.592 <sup>278</sup>	70.72 <sup>140</sup>	21.843 <sup>275</sup>	60.82 <sup>103</sup>	44.689 <sup>283</sup>	46.29 <sup>157</sup>
30.8	36.870 <sup>293</sup>	69.32 <sup>155</sup>	22.118 <sup>290</sup>	61.85 <sup>132</sup>	44.972 <sup>300</sup>	44.72 <sup>163</sup>
May 10.8	37.163 <sup>303</sup>	67.77 <sup>165</sup>	22.408 <sup>297</sup>	63.17 <sup>160</sup>	45.272 <sup>310</sup>	43.09 <sup>165</sup>
20.7	37.466 <sup>303</sup>	66.12 <sup>169</sup>	22.705 <sup>301</sup>	64.77 <sup>184</sup>	45.582 <sup>313</sup>	41.44 <sup>165</sup>
30.7	37.769 <sup>298</sup>	64.43 <sup>171</sup>	23.006 <sup>293</sup>	66.61 <sup>201</sup>	45.895 <sup>310</sup>	39.79 <sup>155</sup>
June 9.7	38.067 <sup>284</sup>	62.72 <sup>165</sup>	23.299 <sup>283</sup>	68.62 <sup>210</sup>	46.205 <sup>298</sup>	38.24 <sup>142</sup>
19.7	38.351 <sup>264</sup>	61.07 <sup>156</sup>	23.582 <sup>260</sup>	70.72 <sup>217</sup>	46.503 <sup>278</sup>	36.82 <sup>127</sup>
29.6	38.615 <sup>236</sup>	59.51 <sup>142</sup>	23.842 <sup>230</sup>	72.89 <sup>217</sup>	46.781 <sup>250</sup>	35.55 <sup>108</sup>
July 9.6	38.851 <sup>201</sup>	58.09 <sup>126</sup>	24.072 <sup>199</sup>	75.06 <sup>211</sup>	47.031 <sup>216</sup>	34.47 <sup>86</sup>
19.6	39.052 <sup>162</sup>	56.83 <sup>106</sup>	24.271 <sup>157</sup>	77.17 <sup>197</sup>	47.247 <sup>179</sup>	33.61 <sup>62</sup>
29.6	39.214 <sup>119</sup>	55.77 <sup>85</sup>	24.428 <sup>118</sup>	79.14 <sup>183</sup>	47.426 <sup>134</sup>	32.99 <sup>39</sup>
Aug. 8.5	39.333 <sup>75</sup>	54.92 <sup>64</sup>	24.546 <sup>70</sup>	80.97 <sup>169</sup>	47.560 <sup>88</sup>	32.60 <sup>16</sup>
18.5	39.408 <sup>30</sup>	54.28 <sup>42</sup>	24.616 <sup>31</sup>	82.66 <sup>145</sup>	47.648 <sup>41</sup>	32.44 <sup>7</sup>
28.5	39.438 <sup>14</sup>	53.86 <sup>22</sup>	24.647 <sup>15</sup>	84.11 <sup>122</sup>	47.689 <sup>3</sup>	32.51 <sup>26</sup>
Sept. 7.4	39.424 <sup>54</sup>	53.64 <sup>3</sup>	24.632 <sup>54</sup>	85.33 <sup>101</sup>	47.686 <sup>47</sup>	32.77 <sup>43</sup>
17.4	39.370 <sup>88</sup>	53.61 <sup>14</sup>	24.578 <sup>84</sup>	86.34 <sup>75</sup>	47.639 <sup>82</sup>	33.20 <sup>55</sup>
27.4	39.282 <sup>116</sup>	53.75 <sup>29</sup>	24.494 <sup>115</sup>	87.09 <sup>49</sup>	47.557 <sup>112</sup>	33.75 <sup>65</sup>
Oct. 7.4	39.166 <sup>136</sup>	54.04 <sup>39</sup>	24.379 <sup>135</sup>	87.58 <sup>28</sup>	47.445 <sup>135</sup>	34.40 <sup>71</sup>
17.3	39.030 <sup>148</sup>	54.43 <sup>48</sup>	24.244 <sup>146</sup>	87.86 <sup>1</sup>	47.310 <sup>150</sup>	35.11 <sup>71</sup>
27.3	38.882 <sup>152</sup>	54.91 <sup>56</sup>	24.098 <sup>153</sup>	87.87 <sup>22</sup>	47.160 <sup>155</sup>	35.82 <sup>73</sup>
Nov. 6.3	38.730 <sup>149</sup>	55.47 <sup>59</sup>	23.945 <sup>152</sup>	87.65 <sup>43</sup>	47.005 <sup>152</sup>	36.55 <sup>67</sup>
16.3	38.581 <sup>137</sup>	56.06 <sup>62</sup>	23.793 <sup>142</sup>	87.22 <sup>64</sup>	46.853 <sup>144</sup>	37.22 <sup>59</sup>
26.2	38.444 <sup>121</sup>	56.68 <sup>64</sup>	23.651 <sup>128</sup>	86.58 <sup>87</sup>	46.709 <sup>127</sup>	37.81 <sup>52</sup>
Dec. 6.2	38.323 <sup>99</sup>	57.32 <sup>63</sup>	23.523 <sup>112</sup>	85.71 <sup>102</sup>	46.582 <sup>108</sup>	38.33 <sup>42</sup>
16.2	38.224 <sup>75</sup>	57.95 <sup>61</sup>	23.411 <sup>88</sup>	84.69 <sup>116</sup>	46.474 <sup>81</sup>	38.75 <sup>32</sup>
26.1	38.149 <sup>48</sup>	58.56 <sup>58</sup>	23.323 <sup>63</sup>	83.53 <sup>131</sup>	46.393 <sup>55</sup>	39.07 <sup>22</sup>
36.1	38.101	59.14	23.260	82.22	46.338	39.29
Mean Place	36.066	76.97	21.284	60.14	44.266	55.00
Sec δ, Tan δ	1.010	-0.144	1.014	+0.168	1.043	-0.296
L α, L δ	0.00	+0.3	0.00	+0.3	0.00	+0.3
ω α, ω δ	+0.01	-0.6	-0.01	-0.6	+0.02	-0.6
AUTHORITY			A. E.		A. E.	



# APPARENT PLACES OF STARS, 1922. 419

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		$\gamma$ Gruis. Mag. 3.2		16 Pegasi. Mag. 5.1		$\alpha$ Aquarii. Mag. 3.2	
		R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
		<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>	<sup>h</sup> <sup>m</sup>	<sup>°</sup> <sup>'</sup>
		21 49	37 43	21 49	25 33	22 1	0 41
		<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>	<sup>s</sup>
Jan.	1.1	11.382	62	30.221	77	39.53	185
	11.1	11.320	26	30.144	43	37.68	202
	21.1	11.294	11	30.101	14	35.66	207
	31.0	11.305	52	30.087	22	33.59	206
Feb.	10.0	11.357	89	30.109	57	31.53	196
	20.0	11.446	127	30.166	96	29.57	176
Mar.	2.0	11.573	164	30.262	133	27.81	151
	11.9	11.737	203	30.395	167	26.30	117
	21.9	11.940	237	30.562	205	25.13	77
	31.9	12.177	271	30.767	240	24.36	32
Apr.	10.9	12.448	301	31.007	266	24.04	11
	20.8	12.749	329	31.273	286	24.15	58
	30.8	13.078	348	31.559	306	24.73	101
May	10.8	13.426	361	31.865	318	25.74	143
	20.7	13.787	368	32.183	318	27.17	178
	30.7	14.155	363	32.501	310	28.95	210
June	9.7	14.518	352	32.811	295	31.05	235
	19.7	14.870	328	33.106	276	33.40	253
	29.6	15.198	299	33.382	242	35.93	264
July	9.6	15.497	261	33.624	206	38.57	270
	19.6	15.758	214	33.830	168	41.27	268
	29.6	15.972	165	33.998	120	43.95	261
Aug.	8.5	16.137	111	34.118	76	46.56	249
	18.5	16.248	54	34.194	28	49.05	231
	28.5	16.302	1	34.222	13	51.36	208
Sept.	7.4	16.303	53	34.209	58	53.44	183
	17.4	16.250	99	34.151	97	55.27	158
	27.4	16.151	138	34.054	119	56.85	124
Oct.	7.4	16.013	168	33.935	150	58.09	92
	17.3	15.845	188	33.785	163	59.01	57
	27.3	15.657	198	33.622	172	59.58	24
Nov.	6.3	15.459	198	33.450	173	59.82	15
	16.3	15.261	188	33.277	168	59.67	53
	26.2	15.073	171	33.109	156	59.14	85
Dec.	6.2	14.902	147	32.953	139	58.29	119
	16.2	14.755	116	32.814	118	57.10	150
	26.1	14.639	82	32.696	94	55.60	172
	36.1	14.557		32.602		53.88	
Mean Place		12.614	56.98	30.725	27.63	46.704	57.47
Sec $\delta$ , Tan $\delta$		1.264	-0.774	1.108	+0.478	1.000	-0.012
L $\alpha$ , L $\delta$		+0.01	+0.3	-0.01	+0.3	0.00	+0.3
$\omega$ $\alpha$ , $\omega$ $\delta$		+0.04	-0.5	-0.03	-0.5	0.00	-0.5
AUTHORITY		A. E.		A. E.		A. E.	

## 420 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		$\alpha$ Gruis. Mag. 2.2		$\iota$ Pegasi. Mag. 4.0		$\zeta$ Cephei. Mag. 3.6	
		R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. N.
		<sup>h</sup> 22 <sup>m</sup> 3 <sup>s</sup>	<sup>°</sup> 47 <sup>'</sup> 19	<sup>h</sup> 22 <sup>m</sup> 3 <sup>s</sup>	<sup>°</sup> 24 <sup>'</sup> 57	<sup>h</sup> 22 <sup>m</sup> 8 <sup>s</sup>	<sup>°</sup> 57 <sup>'</sup> 48
Jan.	1.1	17.924	99	22.288	84	8.289	237
	11.1	17.825	60	22.204	55	8.052	190
	21.1	17.765	16	22.149	25	7.862	132
	31.1	17.749	28	22.124	8	7.730	68
Feb.	10.0	17.777	76	22.132	43	7.662	2
	20.0	17.853	121	22.175	80	7.660	72
Mar.	2.0	17.974	166	22.255	118	7.732	143
	12.0	18.140	211	22.373	155	7.875	215
Apr.	21.9	18.351	252	22.528	192	8.090	279
	31.9	18.603	293	22.720	226	8.369	341
	10.9	18.896	332	22.946	257	8.710	390
	20.8	19.228	361	23.203	283	9.100	429
May	30.8	19.589	386	23.486	302	9.529	458
	10.8	19.975	407	23.788	315	9.987	472
	20.8	20.382	414	24.103	319	10.459	474
	30.7	20.796	410	24.422	315	10.933	461
June	9.7	21.206	403	24.737	303	11.394	437
	19.7	21.609	378	25.040	282	11.831	400
July	29.7	21.987	351	25.322	254	12.231	351
	9.6	22.338	306	25.576	220	12.582	297
Aug.	19.6	22.644	258	25.796	180	12.879	232
	29.6	22.902	201	25.976	136	13.111	167
	8.5	23.103	142	26.112	92	13.278	95
	18.5	23.245	76	26.204	45	13.373	25
Sept.	28.5	23.321	12	26.249	0	13.398	42
	7.5	23.333	47	26.249	41	13.356	109
	17.4	23.286	102	26.208	79	13.247	167
	27.4	23.184	151	26.129	110	13.080	221
Oct.	7.4	23.033	192	26.019	135	12.859	263
	17.4	22.841	221	25.884	153	12.596	299
Nov.	27.3	22.620	235	25.731	163	12.297	325
	6.3	22.385	241	25.568	166	11.972	342
Dec.	16.3	22.144	232	25.402	164	11.630	346
	26.2	21.912	218	25.238	154	11.284	341
	6.2	21.694	194	25.084	141	10.943	326
	16.2	21.500	162	24.943	122	10.617	301
	26.2	21.338	125	24.821	99	10.316	268
	36.1	21.213		24.722		10.048	
Mean Place		19.434	82.82	22.706	48.75	8.758	59.21
Sec $\delta$ , Tan $\delta$		1.476	-1.085	1.103	+0.465	1.877	+1.589
L $\alpha$ , L $\delta$		+0.01	+0.3	-0.01	+0.3	-0.02	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$		+0.06	-0.5	-0.03	-0.5	-0.09	-0.5
AUTHORITY		A. E.		A. N.		A. E.	

APPARENT PLACES OF STARS, 1922. 421

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	θ Aquarii. Mag. 4.3		α Tucanæ. Mag. 2.9		γ Aquarii. Mag. 4.0	
	R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
	<sup>h</sup> <sup>m</sup> 22 12	<sup>°</sup> <sup>'</sup> 8 9	<sup>h</sup> <sup>m</sup> 22 13	60 38	<sup>h</sup> <sup>m</sup> 22 17	<sup>°</sup> <sup>'</sup> 1 46
Jan. 1.1	42.528 <sup>s</sup> 63	77.63 <sup>s</sup> 50	7.88 <sup>s</sup> 19	64.84 <sup>s</sup> 189	37.167 <sup>s</sup> 67	46.97 <sup>s</sup> 76
11.1	42.465 35	78.13 43	7.69 13	62.95 223	37.100 40	47.73 74
21.1	42.430 11	78.56 31	7.56 6	60.72 255	37.060 18	48.47 63
31.0	42.419 20	78.87 15	7.50 1	58.17 279	37.042 13	49.10 53
Feb. 10.0	42.439 49	79.02 3	7.49 7	55.38 295	37.055 41	49.63 39
20.0	42.488 81	78.99 20	7.56 12	52.43 305	37.096 73	50.02 19
Mar. 2.0	42.569 110	78.79 40	7.68 20	49.38 309	37.169 102	50.21 5
12.0	42.679 144	78.39 66	7.88 26	46.29 308	37.271 140	50.16 29
21.9	42.823 175	77.73 87	8.14 31	43.21 297	37.411 168	49.87 56
31.9	42.998 208	76.86 110	8.45 37	40.24 282	37.579 204	49.31 80
Apr. 10.9	43.206 235	75.76 131	8.82 42	37.42 260	37.783 231	48.51 107
20.8	43.441 261	74.45 148	9.24 46	34.82 233	38.014 254	47.44 131
30.8	43.702 283	72.97 163	9.70 50	32.49 201	38.268 279	46.13 153
May 10.8	43.985 297	71.34 175	10.20 52	30.48 164	38.547 294	44.60 168
20.8	44.282 303	69.59 179	10.72 54	28.84 124	38.841 300	42.92 181
30.7	44.585 306	67.80 181	11.26 53	27.60 80	39.141 303	41.11 188
June 9.7	44.891 298	65.99 178	11.79 53	26.80 35	39.444 294	39.23 190
19.7	45.189 282	64.21 169	12.32 50	26.45 12	39.738 280	37.33 189
29.7	45.471 259	62.52 153	12.82 46	26.57 60	40.018 258	35.44 178
July 9.6	45.730 232	60.99 135	13.28 41	27.17 101	40.276 231	33.66 166
19.6	45.962 193	59.64 119	13.69 35	28.18 145	40.507 193	32.00 149
29.6	46.155 154	58.45 93	14.04 27	29.63 179	40.700 157	30.51 132
Aug. 8.5	46.309 114	57.52 73	14.31 19	31.42 209	40.857 113	29.19 109
18.5	46.423 66	56.79 46	14.50 11	33.51 233	40.970 70	28.10 85
28.5	46.489 25	56.33 25	14.61 2	35.84 245	41.040 26	27.25 65
Sept. 7.5	46.514 17	56.08 6	14.63 7	38.29 250	41.066 13	26.60 40
17.4	46.497 52	56.02 16	14.56 14	40.79 245	41.053 48	26.20 20
27.4	46.445 87	56.18 30	14.42 21	43.24 230	41.005 82	26.00 3
Oct. 7.4	46.358 108	56.48 46	14.21 28	45.54 205	40.923 104	25.97 15
17.4	46.250 129	56.94 54	13.93 31	47.59 172	40.819 123	26.12 33
27.3	46.121 137	57.48 62	13.62 34	49.31 132	40.696 135	26.45 46
Nov. 6.3	45.984 141	58.10 65	13.28 36	50.63 85	40.561 136	26.91 56
16.3	45.843 138	58.75 69	12.92 36	51.48 38	40.425 135	27.47 66
26.2	45.705 127	59.44 68	12.56 34	51.86 14	40.290 127	28.13 71
Dec. 6.2	45.578 116	60.12 67	12.22 31	51.72 66	40.163 115	28.84 77
16.2	45.462 95	60.79 61	11.91 27	51.06 115	40.048 100	29.61 79
26.2	45.367 73	61.40 55	11.64 22	49.91 160	39.948 77	30.40 79
36.1	45.294	61.95	11.42	48.31	39.871	31.19
Mean Place	43.129	79.80	10.15	55.72	37.680	50.78
Sec δ, Tan δ	1.010	-0.144	2.040	-1.778	1.000	-0.031
L α, L δ	0.00	+0.4	+0.02	+0.4	0.00	+0.4
ω α, ω δ	+0.01	-0.5	+0.11	-0.5	0.00	-0.4
AUTHORITY	A. E.		A. E.		A. E.	

## 422 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		$\sigma$ Aquarii. Mag. 4.9		$\eta$ Aquarii. Mag. 4.1		$\kappa$ Aquarii. Mag. 5.3	
		R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. S.
		<sup>h</sup> 22 <sup>m</sup> 26	<sup>°</sup> 11 <sup>'</sup> 4	<sup>h</sup> 22 <sup>m</sup> 31	<sup>°</sup> 0 <sup>'</sup> 30	<sup>h</sup> 22 <sup>m</sup> 33	<sup>°</sup> 4 <sup>'</sup> 37
Jan.	1.2	30.701 <sup>69</sup>	38.25 <sup>39</sup>	20.485 <sup>76</sup>	68.09 <sup>80</sup>	42.608 <sup>75</sup>	48.30 <sup>65</sup>
	11.1	30.632 <sup>47</sup>	38.64 <sup>26</sup>	20.409 <sup>52</sup>	68.89 <sup>76</sup>	42.533 <sup>53</sup>	48.95 <sup>57</sup>
	21.1	30.585 <sup>21</sup>	38.90 <sup>13</sup>	20.357 <sup>29</sup>	69.65 <sup>69</sup>	42.480 <sup>29</sup>	49.52 <sup>48</sup>
	31.1	30.564 <sup>6</sup>	39.03 <sup>3</sup>	20.328 <sup>0</sup>	70.34 <sup>58</sup>	42.451 <sup>3</sup>	50.00 <sup>35</sup>
Feb.	10.0	30.570 <sup>34</sup>	39.00 <sup>20</sup>	20.328 <sup>24</sup>	70.92 <sup>44</sup>	42.448 <sup>25</sup>	50.35 <sup>19</sup>
	20.0	30.604 <sup>65</sup>	38.80 <sup>40</sup>	20.352 <sup>60</sup>	71.36 <sup>27</sup>	42.473 <sup>56</sup>	50.54 <sup>1</sup>
Mar.	2.0	30.669 <sup>97</sup>	38.40 <sup>61</sup>	20.412 <sup>89</sup>	71.63 <sup>1</sup>	42.529 <sup>87</sup>	50.53 <sup>22</sup>
	12.0	30.766 <sup>131</sup>	37.79 <sup>82</sup>	20.501 <sup>124</sup>	71.64 <sup>22</sup>	42.616 <sup>121</sup>	50.31 <sup>45</sup>
	21.9	30.897 <sup>164</sup>	36.97 <sup>104</sup>	20.625 <sup>156</sup>	71.42 <sup>49</sup>	42.737 <sup>155</sup>	49.86 <sup>70</sup>
	31.9	31.061 <sup>197</sup>	35.93 <sup>125</sup>	20.781 <sup>192</sup>	70.93 <sup>75</sup>	42.892 <sup>188</sup>	49.16 <sup>96</sup>
Apr.	10.9	31.258 <sup>227</sup>	34.68 <sup>144</sup>	20.973 <sup>220</sup>	70.18 <sup>103</sup>	43.080 <sup>220</sup>	48.20 <sup>120</sup>
	20.9	31.485 <sup>256</sup>	33.24 <sup>160</sup>	21.193 <sup>249</sup>	69.15 <sup>128</sup>	43.300 <sup>249</sup>	47.00 <sup>141</sup>
	30.8	31.741 <sup>278</sup>	31.64 <sup>173</sup>	21.442 <sup>273</sup>	67.87 <sup>150</sup>	43.549 <sup>271</sup>	45.59 <sup>159</sup>
May	10.8	32.019 <sup>296</sup>	29.91 <sup>181</sup>	21.715 <sup>291</sup>	66.37 <sup>167</sup>	43.820 <sup>291</sup>	44.00 <sup>174</sup>
	20.8	32.315 <sup>306</sup>	28.10 <sup>185</sup>	22.006 <sup>300</sup>	64.70 <sup>182</sup>	44.111 <sup>301</sup>	42.26 <sup>184</sup>
	30.7	32.621 <sup>309</sup>	26.25 <sup>182</sup>	22.306 <sup>303</sup>	62.88 <sup>190</sup>	44.412 <sup>305</sup>	40.42 <sup>189</sup>
June	9.7	32.930 <sup>304</sup>	24.43 <sup>176</sup>	22.609 <sup>298</sup>	60.98 <sup>193</sup>	44.717 <sup>301</sup>	38.53 <sup>189</sup>
	19.7	33.234 <sup>291</sup>	22.67 <sup>163</sup>	22.907 <sup>285</sup>	59.05 <sup>191</sup>	45.018 <sup>288</sup>	36.64 <sup>182</sup>
	29.7	33.525 <sup>269</sup>	21.04 <sup>148</sup>	23.192 <sup>265</sup>	57.14 <sup>186</sup>	45.306 <sup>269</sup>	34.82 <sup>172</sup>
July	9.6	33.794 <sup>243</sup>	19.56 <sup>129</sup>	23.457 <sup>239</sup>	55.28 <sup>174</sup>	45.575 <sup>241</sup>	33.10 <sup>158</sup>
	19.6	34.037 <sup>207</sup>	18.27 <sup>106</sup>	23.696 <sup>203</sup>	53.54 <sup>158</sup>	45.816 <sup>208</sup>	31.52 <sup>139</sup>
	29.6	34.244 <sup>168</sup>	17.21 <sup>82</sup>	23.899 <sup>168</sup>	51.96 <sup>138</sup>	46.024 <sup>171</sup>	30.13 <sup>118</sup>
Aug.	8.6	34.412 <sup>126</sup>	16.39 <sup>57</sup>	24.067 <sup>125</sup>	50.58 <sup>120</sup>	46.195 <sup>130</sup>	28.95 <sup>95</sup>
	18.5	34.538 <sup>82</sup>	15.82 <sup>32</sup>	24.192 <sup>85</sup>	49.38 <sup>96</sup>	46.325 <sup>85</sup>	28.00 <sup>72</sup>
	28.5	34.620 <sup>38</sup>	15.50 <sup>9</sup>	24.277 <sup>39</sup>	48.42 <sup>72</sup>	46.410 <sup>44</sup>	27.28 <sup>47</sup>
Sept.	7.5	34.658 <sup>3</sup>	15.41 <sup>13</sup>	24.316 <sup>1</sup>	47.70 <sup>50</sup>	46.454 <sup>2</sup>	26.81 <sup>25</sup>
	17.4	34.655 <sup>42</sup>	15.54 <sup>32</sup>	24.317 <sup>38</sup>	47.20 <sup>27</sup>	46.456 <sup>35</sup>	26.56 <sup>4</sup>
	27.4	34.613 <sup>75</sup>	15.86 <sup>47</sup>	24.279 <sup>68</sup>	46.93 <sup>7</sup>	46.421 <sup>67</sup>	26.52 <sup>15</sup>
Oct.	7.4	34.538 <sup>102</sup>	16.33 <sup>59</sup>	24.211 <sup>96</sup>	46.86 <sup>12</sup>	46.354 <sup>94</sup>	26.67 <sup>31</sup>
	17.4	34.436 <sup>122</sup>	16.92 <sup>68</sup>	24.115 <sup>114</sup>	46.98 <sup>24</sup>	46.260 <sup>114</sup>	26.98 <sup>44</sup>
	27.3	34.314 <sup>133</sup>	17.60 <sup>72</sup>	24.001 <sup>128</sup>	47.22 <sup>43</sup>	46.146 <sup>127</sup>	27.42 <sup>55</sup>
Nov.	6.3	34.181 <sup>139</sup>	18.32 <sup>74</sup>	23.873 <sup>131</sup>	47.65 <sup>55</sup>	46.019 <sup>134</sup>	27.97 <sup>63</sup>
	16.3	34.042 <sup>137</sup>	19.06 <sup>71</sup>	23.742 <sup>133</sup>	48.20 <sup>64</sup>	45.885 <sup>133</sup>	28.60 <sup>68</sup>
	26.3	33.905 <sup>130</sup>	19.77 <sup>69</sup>	23.609 <sup>128</sup>	48.84 <sup>72</sup>	45.752 <sup>128</sup>	29.28 <sup>72</sup>
Dec.	6.2	33.775 <sup>119</sup>	20.46 <sup>63</sup>	23.481 <sup>118</sup>	49.56 <sup>78</sup>	45.624 <sup>117</sup>	30.00 <sup>73</sup>
	16.2	33.656 <sup>101</sup>	21.09 <sup>55</sup>	23.363 <sup>104</sup>	50.34 <sup>81</sup>	45.507 <sup>104</sup>	30.73 <sup>71</sup>
	26.2	33.555 <sup>83</sup>	21.64 <sup>47</sup>	23.259 <sup>84</sup>	51.15 <sup>82</sup>	45.403 <sup>87</sup>	31.44 <sup>69</sup>
	36.1	33.472	22.11	23.175	51.97	45.316	32.13
Mean Place		31.274	39.02	20.919	71.76	43.071	50.67
Sec $\delta$ , Tan $\delta$		1.019	-0.196	1.000	-0.009	1.003	-0.081
L $\alpha$ , L $\delta$		0.00	+0.4	0.00	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$		+0.01	-0.4	0.00	-0.4	+0.01	-0.4

AUTHORITY

A. E.

# APPARENT PLACES OF STARS, 1922. 423

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\zeta$ Pegasi. Mag. 3.6		$\beta$ Gruis. Mag. 2.2		$\eta$ Pegasi. Mag. 3.1	
	R. A.	Dec. N.	R. A.	Dec. S.	R. A.	Dec. N.
	<sup>h</sup> 22 <sup>m</sup> 37	<sup>°</sup> 10 <sup>'</sup> 25	<sup>h</sup> 22 <sup>m</sup> 37	<sup>°</sup> 47 <sup>'</sup> 17	<sup>h</sup> 22 <sup>m</sup> 39	<sup>°</sup> 29 <sup>'</sup> 48
Jan. 1.2	33.973 <sup>s</sup> 82	32.22 <sup>s</sup> 114	59.691 <sup>s</sup> 140	44.12 <sup>s</sup> 113	20.441 <sup>s</sup> 119	58.52 <sup>s</sup> 162
11.1	33.891 64	31.08 123	59.551 103	42.99 148	20.322 95	56.90 187
21.1	33.827 40	29.85 122	59.448 65	41.51 182	20.227 66	55.03 200
31.1	33.787 15	28.63 120	59.383 24	39.69 209	20.161 37	53.03 208
Feb. 10.0	33.772 15	27.43 106	59.359 20	37.60 232	20.124 1	50.95 206
20.0	33.787 51	26.37 89	59.379 65	35.28 250	20.125 38	48.89 195
Mar. 2.0	33.838 79	25.48 68	59.444 111	32.78 264	20.163 79	46.94 177
12.0	33.917 118	24.80 39	59.555 157	30.14 271	20.242 121	45.17 148
21.9	34.035 153	24.41 14	59.712 205	27.43 273	20.363 162	43.69 114
31.9	34.188 188	24.27 22	59.917 248	24.70 271	20.525 205	42.55 73
Apr. 10.9	34.376 221	24.49 56	60.165 292	21.99 262	20.730 239	41.82 31
20.9	34.597 245	25.05 88	60.457 331	19.37 249	20.969 274	41.51 14
30.8	34.842 274	25.93 120	60.788 362	16.88 224	21.243 299	41.65 61
May 10.8	35.116 292	27.13 149	61.150 387	14.64 204	21.542 318	42.26 104
20.8	35.408 302	28.62 172	61.537 406	12.60 173	21.860 332	43.30 145
30.7	35.710 306	30.34 192	61.943 410	10.87 137	22.192 331	44.75 181
June 9.7	36.016 301	32.26 206	62.353 412	9.50 100	22.523 324	46.56 213
19.7	36.317 290	34.32 215	62.765 396	8.50 58	22.847 310	48.69 238
29.7	36.607 268	36.47 217	63.161 371	7.92 19	23.157 285	51.07 256
July 9.6	36.875 238	38.64 214	63.532 337	7.73 24	23.442 254	53.63 269
19.6	37.113 208	40.78 206	63.869 293	7.97 67	23.696 216	56.32 275
29.6	37.321 169	42.84 195	64.162 243	8.64 104	23.912 175	59.07 274
Aug. 8.6	37.490 129	44.79 177	64.405 185	9.68 139	24.087 131	61.81 268
18.5	37.619 86	46.56 159	64.590 123	11.07 168	24.218 83	64.49 257
28.5	37.705 43	48.15 135	64.713 60	12.75 191	24.301 39	67.06 238
Sept. 7.5	37.748 2	49.50 117	64.773 1	14.66 205	24.340 5	69.44 219
17.4	37.750 33	50.67 89	64.772 62	16.71 210	24.335 46	71.63 193
27.4	37.717 65	51.56 65	64.710 110	18.81 209	24.289 81	73.56 167
Oct. 7.4	37.652 94	52.21 43	64.600 155	20.90 196	24.208 110	75.23 134
17.4	37.558 110	52.64 18	64.445 193	22.86 178	24.098 135	76.57 102
27.3	37.448 128	52.82 5	64.252 215	24.64 151	23.963 151	77.59 66
Nov. 6.3	37.320 134	52.77 24	64.037 230	26.15 118	23.812 162	78.25 30
16.3	37.186 137	52.53 48	63.807 232	27.33 79	23.650 167	78.55 7
26.3	37.049 133	52.05 66	63.575 225	28.12 38	23.483 166	78.48 46
Dec. 6.2	36.916 124	51.39 87	63.350 211	28.50 2	23.317 159	78.02 82
16.2	36.792 112	50.52 99	63.139 188	28.48 48	23.158 146	77.20 116
26.2	36.680 96	49.53 109	62.951 159	28.00 88	23.012 129	76.04 148
36.1	36.584	48.44	62.792	27.12	22.883	74.56
Mean Place	34.283	25.39	61.010	35.24	20.614	45.93
Sec $\delta$ , Tan $\delta$	1.017	+0.184	1.474	-1.083	1.153	+0.573
L $\alpha$ , L $\delta$	0.00	+0.4	+0.01	+0.4	-0.01	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.01	-0.4	+0.07	-0.4	-0.04	-0.3
AUTHORITY	A. E.		A. E.		A. E.	

## 424 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	ε Gruis. Mag. 3·7		μ Pegasi. Mag. 3·7		λ Aquarii. Mag. 3·8	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 22 <sup>m</sup> 43	<sup>°</sup> 51 <sup>'</sup> 43	<sup>h</sup> 22 <sup>m</sup> 46	<sup>°</sup> 24 <sup>'</sup> 11	<sup>h</sup> 22 <sup>m</sup> 48	<sup>°</sup> 7 <sup>'</sup> 59
Jan. 1·2	49·536 <sup>168</sup>	48·43 <sup>127</sup>	14·039 <sup>108</sup>	32·44 <sup>147</sup>	32·339 <sup>82</sup>	41·44 <sup>51</sup>
11·2	49·368 <sup>129</sup>	47·16 <sup>163</sup>	13·931 <sup>87</sup>	30·97 <sup>165</sup>	32·257 <sup>66</sup>	41·95 <sup>41</sup>
21·1	49·239 <sup>85</sup>	45·53 <sup>202</sup>	13·844 <sup>63</sup>	29·32 <sup>176</sup>	32·191 <sup>40</sup>	42·36 <sup>33</sup>
31·1	49·154 <sup>41</sup>	43·51 <sup>229</sup>	13·781 <sup>34</sup>	27·56 <sup>181</sup>	32·151 <sup>18</sup>	42·69 <sup>11</sup>
Feb. 10·1	49·113 <sup>6</sup>	41·22 <sup>253</sup>	13·747 <sup>2</sup>	25·75 <sup>178</sup>	32·133 <sup>11</sup>	42·80 <sup>5</sup>
20·0	49·119 <sup>57</sup>	38·69 <sup>273</sup>	13·745 <sup>33</sup>	23·97 <sup>165</sup>	32·144 <sup>41</sup>	42·75 <sup>23</sup>
Mar. 2·0	49·176 <sup>107</sup>	35·96 <sup>283</sup>	13·778 <sup>71</sup>	22·32 <sup>147</sup>	32·185 <sup>76</sup>	42·52 <sup>46</sup>
12·0	49·283 <sup>159</sup>	33·13 <sup>292</sup>	13·849 <sup>111</sup>	20·85 <sup>120</sup>	32·261 <sup>107</sup>	42·06 <sup>67</sup>
22·0	49·442 <sup>210</sup>	30·21 <sup>291</sup>	13·960 <sup>150</sup>	19·65 <sup>87</sup>	32·368 <sup>144</sup>	41·39 <sup>92</sup>
31·9	49·652 <sup>258</sup>	27·30 <sup>287</sup>	14·110 <sup>190</sup>	18·78 <sup>49</sup>	32·512 <sup>177</sup>	40·47 <sup>113</sup>
Apr. 10·9	49·910 <sup>306</sup>	24·43 <sup>274</sup>	14·300 <sup>226</sup>	18·29 <sup>10</sup>	32·689 <sup>211</sup>	39·34 <sup>136</sup>
20·9	50·216 <sup>349</sup>	21·69 <sup>258</sup>	14·526 <sup>259</sup>	18·19 <sup>33</sup>	32·900 <sup>239</sup>	37·98 <sup>153</sup>
30·9	50·565 <sup>384</sup>	19·11 <sup>235</sup>	14·785 <sup>286</sup>	18·52 <sup>74</sup>	33·139 <sup>266</sup>	36·45 <sup>171</sup>
May 10·8	50·949 <sup>414</sup>	16·76 <sup>206</sup>	15·071 <sup>305</sup>	19·26 <sup>114</sup>	33·405 <sup>287</sup>	34·74 <sup>181</sup>
20·8	51·363 <sup>431</sup>	14·70 <sup>175</sup>	15·376 <sup>318</sup>	20·40 <sup>150</sup>	33·692 <sup>300</sup>	32·93 <sup>190</sup>
30·8	51·794 <sup>442</sup>	12·95 <sup>136</sup>	15·694 <sup>322</sup>	21·90 <sup>182</sup>	33·992 <sup>307</sup>	31·03 <sup>190</sup>
June 9·7	52·236 <sup>441</sup>	11·59 <sup>94</sup>	16·016 <sup>316</sup>	23·72 <sup>209</sup>	34·299 <sup>305</sup>	29·13 <sup>187</sup>
19·7	52·677 <sup>427</sup>	10·65 <sup>50</sup>	16·332 <sup>303</sup>	25·81 <sup>229</sup>	34·604 <sup>294</sup>	27·26 <sup>178</sup>
29·7	53·104 <sup>402</sup>	10·15 <sup>7</sup>	16·635 <sup>283</sup>	28·10 <sup>245</sup>	34·898 <sup>277</sup>	25·48 <sup>165</sup>
July 9·7	53·506 <sup>367</sup>	10·08 <sup>37</sup>	16·918 <sup>253</sup>	30·55 <sup>253</sup>	35·175 <sup>254</sup>	23·83 <sup>149</sup>
19·6	53·873 <sup>320</sup>	10·45 <sup>82</sup>	17·171 <sup>219</sup>	33·08 <sup>256</sup>	35·429 <sup>223</sup>	22·34 <sup>127</sup>
29·6	54·193 <sup>268</sup>	11·27 <sup>121</sup>	17·390 <sup>179</sup>	35·64 <sup>252</sup>	35·652 <sup>182</sup>	21·07 <sup>105</sup>
Aug. 8·6	54·461 <sup>205</sup>	12·48 <sup>157</sup>	17·569 <sup>137</sup>	38·16 <sup>244</sup>	35·834 <sup>146</sup>	20·02 <sup>79</sup>
18·6	54·666 <sup>141</sup>	14·05 <sup>187</sup>	17·706 <sup>92</sup>	40·60 <sup>230</sup>	35·980 <sup>103</sup>	19·23 <sup>53</sup>
28·5	54·807 <sup>70</sup>	15·92 <sup>209</sup>	17·798 <sup>48</sup>	42·90 <sup>213</sup>	36·083 <sup>59</sup>	18·70 <sup>31</sup>
Sept. 7·5	54·877 <sup>4</sup>	18·01 <sup>224</sup>	17·846 <sup>6</sup>	45·03 <sup>190</sup>	36·142 <sup>17</sup>	18·39 <sup>5</sup>
17·5	54·881 <sup>61</sup>	20·25 <sup>229</sup>	17·852 <sup>32</sup>	46·93 <sup>167</sup>	36·159 <sup>20</sup>	18·34 <sup>15</sup>
27·4	54·820 <sup>120</sup>	22·54 <sup>226</sup>	17·820 <sup>68</sup>	48·60 <sup>140</sup>	36·139 <sup>54</sup>	18·49 <sup>30</sup>
Oct. 7·4	54·700 <sup>167</sup>	24·80 <sup>213</sup>	17·752 <sup>96</sup>	50·00 <sup>111</sup>	36·085 <sup>84</sup>	18·79 <sup>49</sup>
17·4	54·533 <sup>211</sup>	26·93 <sup>190</sup>	17·656 <sup>119</sup>	51·11 <sup>82</sup>	36·001 <sup>103</sup>	19·28 <sup>59</sup>
27·4	54·322 <sup>239</sup>	28·83 <sup>161</sup>	17·537 <sup>136</sup>	51·93 <sup>49</sup>	35·898 <sup>119</sup>	19·87 <sup>67</sup>
Nov. 6·3	54·083 <sup>255</sup>	30·44 <sup>126</sup>	17·401 <sup>146</sup>	52·42 <sup>17</sup>	35·779 <sup>130</sup>	20·54 <sup>73</sup>
16·3	53·828 <sup>262</sup>	31·70 <sup>81</sup>	17·255 <sup>151</sup>	52·59 <sup>16</sup>	35·649 <sup>132</sup>	21·27 <sup>74</sup>
26·3	53·566 <sup>258</sup>	32·51 <sup>40</sup>	17·104 <sup>150</sup>	52·43 <sup>48</sup>	35·517 <sup>126</sup>	22·01 <sup>73</sup>
Dec. 6·3	53·308 <sup>242</sup>	32·91 <sup>9</sup>	16·954 <sup>145</sup>	51·95 <sup>80</sup>	35·391 <sup>121</sup>	22·74 <sup>70</sup>
16·2	53·066 <sup>218</sup>	32·82 <sup>55</sup>	16·809 <sup>134</sup>	51·15 <sup>108</sup>	35·270 <sup>111</sup>	23·44 <sup>65</sup>
26·2	52·848 <sup>187</sup>	32·27 <sup>100</sup>	16·675 <sup>121</sup>	50·07 <sup>135</sup>	35·159 <sup>94</sup>	24·09 <sup>61</sup>
36·2	52·661	31·27	16·554	48·72	35·065	24·70
Mean Place	51·014	38·34	14·197	21·62	32·766	42·15
Sec δ, Tan δ	1·614	—1·267	1·096	+0·449	1·010	—0·140
L α, L δ	+0·01	+0·4	0·00	+0·4	—0·00	+0·4
ω α, ω δ	+0·08	—0·3	—0·03	—0·3	+0·01	—0·3
AUTHORITY	A. E.		A. N.		A. E.	

# APPARENT PLACES OF STARS, 1922. 425

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		♈ Aquarii. Mag. 3·5		♋ Piscis Australis. Mag. 1·3		♊ Piscium. Mag. 4·6	
		R. A.	Dec. S.	R. A.	Dec. S.	R. A.	Dec. N.
		h m 22 50	° ' 16 13	h m 22 53	° ' 30 1	h m 22 59	° ' 3 23
Jan.	1·2	30·214 <sup>s</sup> 87	71·48 <sup>s</sup> 21	19·909 <sup>s</sup> 104	75·75 <sup>s</sup> 31	54·207 <sup>s</sup> 91	63·30 <sup>s</sup> 88
	11·1	30·127 68	71·69 4	19·805 82	75·44 60	54·116 91	62·42 88
	21·1	30·059 44	71·73 14	19·723 54	74·84 87	54·042 74	61·54 84
	31·1	30·015 19	71·59 33	19·669 27	73·97 111	53·988 29	60·70 76
Feb.	10·1	29·996 9	71·26 55	19·642 5	72·86 136	53·959 4	59·94 63
	20·0	30·005 41	70·71 74	19·647 42	71·50 157	53·955 27	59·31 46
Mar.	2·0	30·046 75	69·97 97	19·689 77	69·93 178	53·982 60	58·85 25
	12·0	30·121 107	69·00 115	19·766 113	68·15 195	54·042 94	58·60 1
	22·0	30·228 145	67·85 137	19·879 152	66·20 204	54·136 130	58·59 27
	31·9	30·373 178	66·48 154	20·031 193	64·16 217	54·266 166	58·86 55
Apr.	10·9	30·551 214	64·94 169	20·224 226	61·99 222	54·432 201	59·41 84
	20·9	30·765 242	63·25 183	20·450 262	59·77 227	54·633 233	60·25 112
	30·8	31·007 272	61·42 190	20·712 290	57·50 218	54·866 260	61·37 138
May	10·8	31·279 293	59·52 195	21·002 314	55·32 211	55·126 282	62·75 160
	20·8	31·572 306	57·57 194	21·316 334	53·21 195	55·408 297	64·35 178
	30·8	31·878 315	55·63 187	21·650 339	51·26 176	55·705 304	66·13 191
June	9·7	32·193 313	53·76 175	21·989 339	49·50 153	56·009 304	68·04 199
	19·7	32·506 306	52·01 161	22·328 330	47·97 123	56·313 295	70·03 202
	29·7	32·812 286	50·40 138	22·658 314	46·74 94	56·608 278	72·05 199
July	9·7	33·098 263	49·02 116	22·972 289	45·80 58	56·886 254	74·04 191
	19·6	33·361 230	47·86 89	23·261 254	45·22 26	57·140 224	75·95 179
	29·6	33·591 192	46·97 61	23·515 213	44·06 11	57·364 190	77·74 162
Aug.	8·6	33·783 152	46·36 34	23·728 170	45·07 41	57·554 150	79·36 143
	18·5	33·935 108	46·02 5	23·898 122	45·48 75	57·704 108	80·79 121
	28·5	34·043 62	45·97 20	24·020 72	46·23 100	57·812 68	82·00 98
Sept.	7·5	34·105 22	46·17 42	24·092 23	47·23 121	57·880 27	82·98 75
	17·5	34·127 20	46·59 61	24·115 19	48·44 136	57·907 12	83·73 52
	27·4	34·107 54	47·20 78	24·096 60	49·80 146	57·895 43	84·25 30
Oct.	7·4	34·053 88	47·98 88	24·036 100	51·26 148	57·852 73	84·55 8
	17·4	33·965 108	48·86 92	23·936 124	52·74 143	57·779 95	84·63 10
	27·4	33·857 125	49·78 95	23·812 145	54·17 132	57·684 111	84·53 28
Nov.	6·3	33·732 135	50·73 90	23·667 155	55·49 119	57·573 122	84·25 42
	16·3	33·597 138	51·63 85	23·512 161	56·68 95	57·451 126	83·83 56
	26·3	33·459 134	52·48 74	23·351 160	57·63 71	57·325 126	83·27 67
Dec.	6·2	33·325 128	53·22 63	23·191 149	58·34 45	57·199 121	82·60 77
	16·2	33·197 115	53·85 49	23·042 135	58·79 16	57·078 113	81·83 84
	26·2	33·082 98	54·34 32	22·907 118	58·95 11	56·965 101	80·99 88
	36·2	32·984	54·66	22·789	58·84	56·864	80·11
Mean Place		30·736	69·60	20·649	69·84	54·455	59·40
Sec δ, Tan δ		1·042	—0·291	1·155	—0·578	1·002	+0·059
L α, L δ		0·00	+0·4	0·00	+0·4	0·00	+0·4
ω α, ω δ		+0·02	—0·3	+0·04	—0·3	—0·01	—0·3
AUTHORITY		A. E.		A. E.			

## 426 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\beta$ Pegasi. Mag. 2.2-2.7		$\alpha$ Pegasi. Mag. 2.6		$\epsilon^2$ Aquarii. Mag. 3.8	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 22 <sup>m</sup> 59	<sup>°</sup> 27 <sup>'</sup> 39	<sup>h</sup> 23 <sup>m</sup> 0	<sup>°</sup> 14 <sup>'</sup> 47	<sup>h</sup> 23 <sup>m</sup> 5	<sup>°</sup> 21 <sup>'</sup> 35
Jan. 1.2	59.389 <sub>125</sub>	45.29 <sub>145</sub>	52.297 <sub>104</sub>	14.64 <sub>119</sub>	16.858 <sub>101</sub>	50.28 <sub>6</sub>
11.2	59.264 <sub>102</sub>	43.84 <sub>165</sub>	52.193 <sub>83</sub>	13.45 <sub>129</sub>	16.757 <sub>80</sub>	50.34 <sub>17</sub>
21.1	59.162 <sub>81</sub>	42.19 <sub>184</sub>	52.110 <sub>63</sub>	12.16 <sub>134</sub>	16.677 <sub>61</sub>	50.17 <sub>41</sub>
31.1	59.081 <sub>51</sub>	40.35 <sub>188</sub>	52.047 <sub>39</sub>	10.82 <sub>132</sub>	16.616 <sub>34</sub>	49.76 <sub>64</sub>
Feb. 10.1	59.030 <sub>20</sub>	38.47 <sub>189</sub>	52.008 <sub>9</sub>	9.50 <sub>125</sub>	16.582 <sub>6</sub>	49.12 <sub>85</sub>
20.0	59.010 <sub>15</sub>	36.58 <sub>181</sub>	51.999 <sub>20</sub>	8.25 <sub>113</sub>	16.576 <sub>24</sub>	48.27 <sub>108</sub>
Mar. 2.0	59.025 <sub>58</sub>	34.77 <sub>166</sub>	52.019 <sub>57</sub>	7.12 <sub>94</sub>	16.600 <sub>60</sub>	47.19 <sub>129</sub>
12.0	59.083 <sub>97</sub>	33.11 <sub>139</sub>	52.076 <sub>96</sub>	6.18 <sub>67</sub>	16.660 <sub>96</sub>	45.90 <sub>151</sub>
22.0	59.180 <sub>141</sub>	31.72 <sub>108</sub>	52.172 <sub>132</sub>	5.51 <sub>37</sub>	16.756 <sub>131</sub>	44.39 <sub>167</sub>
31.9	59.321 <sub>183</sub>	30.64 <sub>70</sub>	52.304 <sub>168</sub>	5.14 <sub>6</sub>	16.887 <sub>168</sub>	42.72 <sub>183</sub>
Apr. 10.9	59.504 <sub>220</sub>	29.94 <sub>31</sub>	52.472 <sub>207</sub>	5.08 <sub>30</sub>	17.055 <sub>205</sub>	40.89 <sub>197</sub>
20.9	59.724 <sub>255</sub>	29.63 <sub>12</sub>	52.679 <sub>239</sub>	5.38 <sub>66</sub>	17.260 <sub>239</sub>	38.92 <sub>205</sub>
30.9	59.979 <sub>286</sub>	29.75 <sub>55</sub>	52.918 <sub>264</sub>	6.04 <sub>99</sub>	17.499 <sub>267</sub>	36.87 <sub>209</sub>
May 10.8	60.265 <sub>308</sub>	30.30 <sub>97</sub>	53.182 <sub>288</sub>	7.03 <sub>130</sub>	17.766 <sub>294</sub>	34.78 <sub>209</sub>
20.8	60.573 <sub>323</sub>	31.27 <sub>136</sub>	53.470 <sub>302</sub>	8.33 <sub>160</sub>	18.060 <sub>310</sub>	32.69 <sub>201</sub>
30.8	60.896 <sub>331</sub>	32.63 <sub>171</sub>	53.772 <sub>311</sub>	9.93 <sub>185</sub>	18.370 <sub>321</sub>	30.68 <sub>191</sub>
June 9.7	61.227 <sub>326</sub>	34.34 <sub>202</sub>	54.083 <sub>310</sub>	11.78 <sub>202</sub>	18.691 <sub>322</sub>	28.77 <sub>175</sub>
19.7	61.553 <sub>315</sub>	36.36 <sub>227</sub>	54.393 <sub>300</sub>	13.80 <sub>215</sub>	19.013 <sub>317</sub>	27.02 <sub>155</sub>
29.7	61.868 <sub>296</sub>	38.63 <sub>245</sub>	54.693 <sub>280</sub>	15.95 <sub>223</sub>	19.330 <sub>301</sub>	25.47 <sub>130</sub>
July 9.7	62.164 <sub>268</sub>	41.08 <sub>256</sub>	54.973 <sub>257</sub>	18.18 <sub>226</sub>	19.631 <sub>277</sub>	24.17 <sub>101</sub>
19.6	62.432 <sub>233</sub>	43.64 <sub>263</sub>	55.230 <sub>226</sub>	20.44 <sub>222</sub>	19.908 <sub>249</sub>	23.16 <sub>70</sub>
29.6	62.665 <sub>194</sub>	46.27 <sub>264</sub>	55.456 <sub>188</sub>	22.66 <sub>214</sub>	20.157 <sub>209</sub>	22.46 <sub>38</sub>
Aug. 8.6	62.859 <sub>152</sub>	48.91 <sub>259</sub>	55.644 <sub>151</sub>	24.80 <sub>199</sub>	20.366 <sub>171</sub>	22.08 <sub>9</sub>
18.6	63.011 <sub>108</sub>	51.50 <sub>247</sub>	55.795 <sub>108</sub>	26.79 <sub>183</sub>	20.537 <sub>126</sub>	21.99 <sub>22</sub>
28.5	63.119 <sub>63</sub>	53.97 <sub>230</sub>	55.903 <sub>67</sub>	28.62 <sub>163</sub>	20.663 <sub>80</sub>	22.21 <sub>49</sub>
Sept. 7.5	63.182 <sub>21</sub>	56.27 <sub>212</sub>	55.970 <sub>25</sub>	30.25 <sub>142</sub>	20.743 <sub>37</sub>	22.70 <sub>74</sub>
17.5	63.203 <sub>20</sub>	58.39 <sub>188</sub>	55.995 <sub>10</sub>	31.67 <sub>118</sub>	20.780 <sub>7</sub>	23.44 <sub>93</sub>
27.4	63.183 <sub>53</sub>	60.27 <sub>163</sub>	55.985 <sub>47</sub>	32.85 <sub>95</sub>	20.773 <sub>45</sub>	24.37 <sub>107</sub>
Oct. 7.4	63.130 <sub>89</sub>	61.90 <sub>134</sub>	55.938 <sub>72</sub>	33.80 <sub>66</sub>	20.728 <sub>78</sub>	25.44 <sub>116</sub>
17.4	63.041 <sub>111</sub>	63.24 <sub>104</sub>	55.866 <sub>99</sub>	34.46 <sub>42</sub>	20.650 <sub>103</sub>	26.60 <sub>118</sub>
27.4	62.930 <sub>132</sub>	64.28 <sub>69</sub>	55.767 <sub>115</sub>	34.88 <sub>20</sub>	20.547 <sub>122</sub>	27.78 <sub>117</sub>
Nov. 6.3	62.798 <sub>145</sub>	64.97 <sub>37</sub>	55.652 <sub>125</sub>	35.08 <sub>8</sub>	20.425 <sub>134</sub>	28.95 <sub>109</sub>
16.3	62.653 <sub>153</sub>	65.34 <sub>0</sub>	55.527 <sub>134</sub>	35.00 <sub>30</sub>	20.291 <sub>142</sub>	30.04 <sub>95</sub>
26.3	62.500 <sub>155</sub>	65.34 <sub>31</sub>	55.393 <sub>134</sub>	34.70 <sub>54</sub>	20.149 <sub>139</sub>	30.99 <sub>80</sub>
Dec. 6.3	62.345 <sub>153</sub>	65.03 <sub>69</sub>	55.259 <sub>129</sub>	34.16 <sub>76</sub>	20.010 <sub>136</sub>	31.79 <sub>64</sub>
16.2	62.192 <sub>146</sub>	64.34 <sub>101</sub>	55.130 <sub>125</sub>	33.40 <sub>95</sub>	19.874 <sub>125</sub>	32.43 <sub>42</sub>
26.2	62.046 <sub>132</sub>	63.33 <sub>128</sub>	55.005 <sub>111</sub>	32.45 <sub>111</sub>	19.749 <sub>112</sub>	32.85 <sub>20</sub>
36.2	61.914	62.05	54.894	31.34	19.637	33.05
Mean Place	59.436	33.70	52.436	7.11	17.383	46.07
Sec $\delta$ , Tan $\delta$	1.129	+0.524	1.034	+0.264	1.075	-0.396
L $\alpha$ , L $\delta$	0.00	+0.4	0.00	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.03	-0.3	-0.02	-0.3	+0.03	-0.2
AUTHORITY	A. E.		A. E.		A. E.	



# APPARENT PLACES OF STARS, 1922. 427

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\gamma$ Tucanae. Mag. 4.1		$\gamma$ Piscium. Mag. 3.9		$\psi^3$ Aquarii. Mag. 5.2	
	R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 23 <sup>m</sup> 12	<sup>s</sup> 58 39	<sup>h</sup> 23 <sup>m</sup> 13	<sup>s</sup> 2 51	<sup>h</sup> 23 <sup>m</sup> 14	<sup>s</sup> 10 1
Jan. 1.2	51.484 <sup>254</sup>	63.57 <sup>127</sup>	7.102 <sup>95</sup>	24.10 <sup>85</sup>	54.000 <sup>98</sup>	75.94 <sup>47</sup>
11.2	51.230 <sup>214</sup>	62.30 <sup>172</sup>	7.007 <sup>81</sup>	23.25 <sup>83</sup>	53.902 <sup>82</sup>	76.41 <sup>34</sup>
21.1	51.016 <sup>168</sup>	60.58 <sup>214</sup>	6.926 <sup>62</sup>	22.42 <sup>79</sup>	53.820 <sup>63</sup>	76.75 <sup>19</sup>
31.1	50.848 <sup>116</sup>	58.44 <sup>248</sup>	6.864 <sup>40</sup>	21.63 <sup>70</sup>	53.757 <sup>40</sup>	76.94 <sup>1</sup>
Feb. 10.1	50.732 <sup>60</sup>	55.96 <sup>280</sup>	6.824 <sup>14</sup>	20.93 <sup>58</sup>	53.717 <sup>15</sup>	76.95 <sup>16</sup>
20.0	50.672 <sup>4</sup>	53.16 <sup>299</sup>	6.810 <sup>15</sup>	20.35 <sup>42</sup>	53.702 <sup>14</sup>	76.79 <sup>38</sup>
Mar. 2.0	50.668 <sup>58</sup>	50.17 <sup>317</sup>	6.825 <sup>47</sup>	19.93 <sup>20</sup>	53.716 <sup>46</sup>	76.41 <sup>59</sup>
12.0	50.726 <sup>120</sup>	47.00 <sup>324</sup>	6.872 <sup>82</sup>	19.73 <sup>3</sup>	53.762 <sup>80</sup>	75.82 <sup>82</sup>
22.0	50.846 <sup>184</sup>	43.76 <sup>327</sup>	6.954 <sup>118</sup>	19.76 <sup>30</sup>	53.842 <sup>117</sup>	75.00 <sup>104</sup>
31.9	51.030 <sup>244</sup>	40.49 <sup>321</sup>	7.072 <sup>156</sup>	20.06 <sup>57</sup>	53.959 <sup>154</sup>	73.96 <sup>127</sup>
Apr. 10.9	51.274 <sup>303</sup>	37.28 <sup>310</sup>	7.228 <sup>191</sup>	20.63 <sup>86</sup>	54.113 <sup>189</sup>	72.69 <sup>148</sup>
20.9	51.577 <sup>360</sup>	34.18 <sup>291</sup>	7.419 <sup>225</sup>	21.49 <sup>112</sup>	54.302 <sup>223</sup>	71.21 <sup>166</sup>
30.9	51.937 <sup>407</sup>	31.27 <sup>267</sup>	7.644 <sup>253</sup>	22.61 <sup>138</sup>	54.525 <sup>253</sup>	69.55 <sup>180</sup>
May 10.8	52.344 <sup>448</sup>	28.60 <sup>235</sup>	7.897 <sup>278</sup>	23.99 <sup>160</sup>	54.778 <sup>277</sup>	67.75 <sup>190</sup>
20.8	52.792 <sup>478</sup>	26.25 <sup>197</sup>	8.175 <sup>295</sup>	25.59 <sup>178</sup>	55.055 <sup>296</sup>	65.85 <sup>197</sup>
30.8	53.270 <sup>498</sup>	24.28 <sup>157</sup>	8.470 <sup>304</sup>	27.37 <sup>191</sup>	55.351 <sup>307</sup>	63.88 <sup>196</sup>
June 9.7	53.768 <sup>506</sup>	22.71 <sup>113</sup>	8.774 <sup>306</sup>	29.28 <sup>198</sup>	55.658 <sup>309</sup>	61.92 <sup>192</sup>
19.7	54.274 <sup>500</sup>	21.58 <sup>64</sup>	9.080 <sup>300</sup>	31.26 <sup>201</sup>	55.967 <sup>304</sup>	60.00 <sup>182</sup>
29.7	54.774 <sup>478</sup>	20.94 <sup>15</sup>	9.380 <sup>285</sup>	33.27 <sup>198</sup>	56.271 <sup>290</sup>	58.18 <sup>167</sup>
July 9.7	55.252 <sup>447</sup>	20.79 <sup>34</sup>	9.665 <sup>264</sup>	35.25 <sup>190</sup>	56.561 <sup>269</sup>	56.51 <sup>148</sup>
19.6	55.699 <sup>401</sup>	21.13 <sup>84</sup>	9.929 <sup>234</sup>	37.15 <sup>178</sup>	56.830 <sup>241</sup>	55.03 <sup>126</sup>
29.6	56.100 <sup>344</sup>	21.97 <sup>130</sup>	10.163 <sup>201</sup>	38.93 <sup>160</sup>	57.071 <sup>207</sup>	53.77 <sup>100</sup>
Aug. 8.6	56.444 <sup>278</sup>	23.27 <sup>170</sup>	10.364 <sup>163</sup>	40.53 <sup>141</sup>	57.278 <sup>169</sup>	52.77 <sup>73</sup>
18.6	56.722 <sup>204</sup>	24.97 <sup>205</sup>	10.527 <sup>123</sup>	41.94 <sup>120</sup>	57.447 <sup>128</sup>	52.04 <sup>46</sup>
28.5	56.926 <sup>127</sup>	27.02 <sup>234</sup>	10.650 <sup>82</sup>	43.14 <sup>96</sup>	57.575 <sup>85</sup>	51.58 <sup>20</sup>
Sept. 7.5	57.053 <sup>48</sup>	29.36 <sup>252</sup>	10.732 <sup>42</sup>	44.10 <sup>72</sup>	57.660 <sup>45</sup>	51.38 <sup>5</sup>
17.5	57.101 <sup>29</sup>	31.88 <sup>259</sup>	10.774 <sup>4</sup>	44.82 <sup>50</sup>	57.705 <sup>5</sup>	51.43 <sup>28</sup>
27.4	57.072 <sup>104</sup>	34.47 <sup>260</sup>	10.778 <sup>29</sup>	45.32 <sup>27</sup>	57.710 <sup>31</sup>	51.71 <sup>47</sup>
Oct. 7.4	56.968 <sup>170</sup>	37.07 <sup>248</sup>	10.749 <sup>59</sup>	45.59 <sup>6</sup>	57.679 <sup>61</sup>	52.18 <sup>62</sup>
17.4	56.798 <sup>226</sup>	39.55 <sup>226</sup>	10.690 <sup>83</sup>	45.65 <sup>13</sup>	57.618 <sup>86</sup>	52.80 <sup>73</sup>
27.4	56.572 <sup>270</sup>	41.81 <sup>191</sup>	10.607 <sup>101</sup>	45.52 <sup>29</sup>	57.532 <sup>105</sup>	53.53 <sup>80</sup>
Nov. 6.3	56.302 <sup>301</sup>	43.75 <sup>157</sup>	10.506 <sup>113</sup>	45.23 <sup>44</sup>	57.427 <sup>117</sup>	54.33 <sup>84</sup>
16.3	56.001 <sup>320</sup>	45.32 <sup>111</sup>	10.393 <sup>120</sup>	44.79 <sup>56</sup>	57.310 <sup>124</sup>	55.17 <sup>82</sup>
26.3	55.681 <sup>326</sup>	46.43 <sup>61</sup>	10.273 <sup>122</sup>	44.23 <sup>66</sup>	57.186 <sup>127</sup>	55.99 <sup>80</sup>
Dec. 6.3	55.355 <sup>319</sup>	47.04 <sup>10</sup>	10.151 <sup>120</sup>	43.57 <sup>75</sup>	57.059 <sup>124</sup>	56.79 <sup>74</sup>
16.2	55.036 <sup>301</sup>	47.14 <sup>45</sup>	10.031 <sup>114</sup>	42.82 <sup>82</sup>	56.935 <sup>116</sup>	57.53 <sup>66</sup>
26.2	54.735 <sup>273</sup>	46.69 <sup>97</sup>	9.917 <sup>104</sup>	42.00 <sup>84</sup>	56.819 <sup>106</sup>	58.19 <sup>55</sup>
36.2	54.462	45.72	9.813	41.16	56.713	58.74
Mean Place	53.135	50.36	7.279	20.85	54.312	74.86
Sec $\delta$ , Tan $\delta$	1.923	-1.642	1.001	+0.050	1.016	-0.177
L $\alpha$ , L $\delta$	+0.01	+0.4	0.00	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	+0.11	-0.2	0.00	-0.2	+0.01	-0.2
AUTHORITY	A. E.		A. N.			

## 428 APPARENT PLACES OF STARS, 1922.

## AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.	$\tau$ Pegasi. Mag. 4.7		$\kappa$ Piscium. Mag. 4.9		$\iota$ Phoenicis. Mag. 4.8	
	R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. S.
	<sup>h</sup> 23	<sup>m</sup> 16	<sup>h</sup> 23	<sup>m</sup> 22	<sup>h</sup> 23	<sup>m</sup> 30
	<sup>s</sup>	<sup>°</sup> 18	<sup>s</sup>	<sup>°</sup> 49	<sup>s</sup>	<sup>°</sup> 43
Jan. 1.2	46.447 <sup>126</sup>	57.06 <sup>129</sup>	55.891 <sup>101</sup>	44.68 <sup>79</sup>	52.120 <sup>169</sup>	59.06 <sup>56</sup>
11.2	46.321 <sup>105</sup>	55.77 <sup>144</sup>	55.790 <sup>88</sup>	43.89 <sup>75</sup>	51.951 <sup>146</sup>	58.50 <sup>96</sup>
21.1	46.216 <sup>84</sup>	54.33 <sup>158</sup>	55.702 <sup>71</sup>	43.14 <sup>69</sup>	51.805 <sup>119</sup>	57.54 <sup>134</sup>
31.1	46.132 <sup>62</sup>	52.75 <sup>165</sup>	55.631 <sup>49</sup>	42.45 <sup>59</sup>	51.686 <sup>89</sup>	56.20 <sup>169</sup>
Feb. 10.1	46.070 <sup>33</sup>	51.10 <sup>167</sup>	55.582 <sup>24</sup>	41.86 <sup>45</sup>	51.597 <sup>53</sup>	54.51 <sup>199</sup>
20.1	46.037 <sup>1</sup>	49.43 <sup>156</sup>	55.558 <sup>5</sup>	41.41 <sup>29</sup>	51.544 <sup>15</sup>	52.52 <sup>226</sup>
Mar. 2.0	46.038 <sup>38</sup>	47.87 <sup>139</sup>	55.563 <sup>36</sup>	41.12 <sup>7</sup>	51.529 <sup>27</sup>	50.26 <sup>248</sup>
12.0	46.076 <sup>78</sup>	46.48 <sup>116</sup>	55.599 <sup>71</sup>	41.05 <sup>15</sup>	51.556 <sup>71</sup>	47.78 <sup>264</sup>
22.0	46.154 <sup>121</sup>	45.32 <sup>88</sup>	55.670 <sup>108</sup>	41.20 <sup>42</sup>	51.627 <sup>118</sup>	45.14 <sup>277</sup>
31.9	46.275 <sup>160</sup>	44.44 <sup>54</sup>	55.778 <sup>145</sup>	41.62 <sup>68</sup>	51.745 <sup>165</sup>	42.37 <sup>283</sup>
Apr. 10.9	46.435 <sup>203</sup>	43.90 <sup>17</sup>	55.923 <sup>183</sup>	42.30 <sup>96</sup>	51.910 <sup>212</sup>	39.54 <sup>283</sup>
20.9	46.638 <sup>239</sup>	43.73 <sup>21</sup>	56.106 <sup>216</sup>	43.26 <sup>120</sup>	52.122 <sup>255</sup>	36.71 <sup>278</sup>
30.9	46.877 <sup>265</sup>	43.94 <sup>62</sup>	56.322 <sup>246</sup>	44.46 <sup>145</sup>	52.377 <sup>296</sup>	33.93 <sup>266</sup>
May 10.8	47.142 <sup>293</sup>	44.56 <sup>99</sup>	56.568 <sup>272</sup>	45.91 <sup>163</sup>	52.673 <sup>330</sup>	31.27 <sup>249</sup>
20.8	47.435 <sup>311</sup>	45.55 <sup>136</sup>	56.840 <sup>292</sup>	47.54 <sup>180</sup>	53.003 <sup>356</sup>	28.78 <sup>224</sup>
30.8	47.746 <sup>320</sup>	46.91 <sup>167</sup>	57.132 <sup>301</sup>	49.34 <sup>192</sup>	53.359 <sup>375</sup>	26.54 <sup>197</sup>
June 9.8	48.066 <sup>324</sup>	48.58 <sup>195</sup>	57.433 <sup>306</sup>	51.26 <sup>198</sup>	53.734 <sup>384</sup>	24.57 <sup>162</sup>
19.7	48.390 <sup>312</sup>	50.53 <sup>214</sup>	57.739 <sup>300</sup>	53.24 <sup>199</sup>	54.118 <sup>384</sup>	22.95 <sup>123</sup>
29.7	48.702 <sup>296</sup>	52.67 <sup>233</sup>	58.039 <sup>289</sup>	55.23 <sup>194</sup>	54.502 <sup>372</sup>	21.72 <sup>8.2</sup>
July 9.7	48.998 <sup>275</sup>	55.00 <sup>242</sup>	58.328 <sup>268</sup>	57.17 <sup>184</sup>	54.874 <sup>349</sup>	20.90 <sup>38</sup>
19.6	49.273 <sup>242</sup>	57.42 <sup>246</sup>	58.596 <sup>240</sup>	59.01 <sup>172</sup>	55.223 <sup>319</sup>	20.52 <sup>6</sup>
29.6	49.515 <sup>207</sup>	59.88 <sup>243</sup>	58.836 <sup>207</sup>	60.73 <sup>151</sup>	55.542 <sup>280</sup>	20.58 <sup>49</sup>
Aug. 8.6	49.722 <sup>167</sup>	62.31 <sup>237</sup>	59.043 <sup>171</sup>	62.24 <sup>131</sup>	55.822 <sup>233</sup>	21.07 <sup>91</sup>
18.6	49.889 <sup>125</sup>	64.68 <sup>226</sup>	59.214 <sup>132</sup>	63.55 <sup>109</sup>	56.055 <sup>180</sup>	21.98 <sup>128</sup>
28.5	50.014 <sup>86</sup>	66.94 <sup>210</sup>	59.346 <sup>91</sup>	64.64 <sup>85</sup>	56.235 <sup>125</sup>	23.26 <sup>160</sup>
Sept. 7.5	50.100 <sup>40</sup>	69.04 <sup>190</sup>	59.437 <sup>50</sup>	65.49 <sup>59</sup>	56.360 <sup>69</sup>	24.86 <sup>187</sup>
17.5	50.140 <sup>0</sup>	70.94 <sup>168</sup>	59.487 <sup>14</sup>	66.08 <sup>38</sup>	56.429 <sup>14</sup>	26.73 <sup>205</sup>
27.5	50.140 <sup>32</sup>	72.62 <sup>144</sup>	59.501 <sup>21</sup>	66.46 <sup>15</sup>	56.443 <sup>38</sup>	28.78 <sup>213</sup>
Oct. 7.4	50.108 <sup>64</sup>	74.06 <sup>117</sup>	59.480 <sup>54</sup>	66.61 <sup>5</sup>	56.405 <sup>84</sup>	30.91 <sup>214</sup>
17.4	50.044 <sup>92</sup>	75.23 <sup>87</sup>	59.426 <sup>74</sup>	66.56 <sup>23</sup>	56.321 <sup>125</sup>	33.05 <sup>206</sup>
27.4	49.952 <sup>113</sup>	76.10 <sup>60</sup>	59.352 <sup>96</sup>	66.33 <sup>38</sup>	56.196 <sup>156</sup>	35.11 <sup>189</sup>
Nov. 6.3	49.839 <sup>128</sup>	76.70 <sup>28</sup>	59.256 <sup>108</sup>	65.95 <sup>51</sup>	56.040 <sup>180</sup>	37.00 <sup>164</sup>
16.3	49.711 <sup>137</sup>	76.98 <sup>0</sup>	59.148 <sup>116</sup>	65.44 <sup>62</sup>	55.860 <sup>194</sup>	38.64 <sup>132</sup>
26.3	49.574 <sup>142</sup>	76.98 <sup>33</sup>	59.032 <sup>122</sup>	64.82 <sup>68</sup>	55.666 <sup>202</sup>	39.96 <sup>96</sup>
Dec. 6.3	49.432 <sup>142</sup>	76.65 <sup>60</sup>	58.910 <sup>120</sup>	64.14 <sup>75</sup>	55.464 <sup>200</sup>	40.92 <sup>56</sup>
16.2	49.290 <sup>140</sup>	76.05 <sup>89</sup>	58.790 <sup>118</sup>	63.39 <sup>79</sup>	55.264 <sup>193</sup>	41.48 <sup>13</sup>
26.2	49.150 <sup>129</sup>	75.16 <sup>114</sup>	58.672 <sup>108</sup>	62.60 <sup>80</sup>	55.071 <sup>179</sup>	41.61 <sup>29</sup>
36.2	49.021	74.02	58.564	61.80	54.892	41.32
Mean Place	46.417	47.24	56.035	42.51	52.951	47.71
Sec $\delta$ , Tan $\delta$	1.089	+0.431	1.000	+0.014	1.368	-0.934
L $\alpha$ , L $\delta$	0.00	+0.4	0.00	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$	-0.03	-0.2	0.00	-0.2	+0.06	-0.1
AUTHORITY	A. E.		A. E.			

# APPARENT PLACES OF STARS, 1922. 429

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		♈ Piscium. Mag. 4.3		γ Cephei. Mag. 3.4		λ Piscium. Mag. 4.6	
		R. A.	Dec. N.	R. A.	Dec. N.	R. A.	Dec. N.
		<sup>h</sup> 23	<sup>m</sup> 35	<sup>h</sup> 23	<sup>m</sup> 36	<sup>h</sup> 23	<sup>m</sup> 38
		<sup>s</sup> 56	<sup>°</sup> 15	<sup>s</sup> 9	<sup>°</sup> 77	<sup>s</sup> 3	<sup>°</sup> 1
		<sup>′</sup> 22	<sup>′</sup> 41	<sup>′</sup> 43	<sup>′</sup> 11	<sup>′</sup> 09	<sup>′</sup> 21
		<sup>″</sup> 108	<sup>″</sup> 88	<sup>″</sup> 87	<sup>″</sup> 95	<sup>″</sup> 107	<sup>″</sup> 78
Jan.	1.2	56.223	15.41	9.43	70.99	3.909	4.07
	11.2	56.115	14.53	8.56	70.04	3.802	3.29
	21.2	56.017	13.65	7.75	68.54	3.706	2.54
	31.1	55.937	12.80	7.03	66.46	3.624	1.84
Feb.	10.1	55.877	12.01	6.43	63.97	3.562	1.24
	20.1	55.839	11.30	5.98	61.11	3.523	0.77
Mar.	2.0	55.831	10.77	5.69	58.04	3.512	0.46
	12.0	55.852	10.43	5.58	54.86	3.531	0.36
	22.0	55.912	10.33	5.66	51.71	3.587	0.49
Apr.	1.0	56.009	10.45	5.93	48.71	3.679	0.87
	10.9	56.145	10.88	6.37	45.96	3.810	1.51
	20.9	56.316	11.59	6.97	43.58	3.979	2.42
	30.9	56.525	12.56	7.71	41.68	4.183	3.59
May	10.9	56.768	13.82	8.57	40.22	4.421	5.00
	20.8	57.031	15.33	9.52	39.36	4.685	6.61
	30.8	57.321	16.99	10.53	39.08	4.971	8.40
June	9.8	57.621	18.84	11.56	39.38	5.271	10.31
	19.7	57.927	20.80	12.59	40.25	5.576	12.28
	29.7	58.233	22.81	13.59	41.66	5.879	14.27
July	9.7	58.524	24.81	14.53	43.58	6.171	16.22
	19.7	58.800	26.76	15.40	45.97	6.446	18.09
	29.6	59.047	28.62	16.16	48.73	6.695	19.82
Aug.	8.6	59.264	30.35	16.80	51.83	6.913	21.38
	18.6	59.447	31.87	17.32	55.24	7.097	22.73
	28.5	59.589	33.18	17.70	58.80	7.241	23.85
Sept.	7.5	59.694	34.30	17.94	62.50	7.346	24.74
	17.5	59.757	35.15	18.03	66.23	7.412	25.38
	27.5	59.785	35.78	17.97	69.96	7.439	25.78
Oct.	7.4	59.778	36.16	17.76	73.55	7.432	25.96
	17.4	59.740	36.37	17.42	76.92	7.395	25.93
	27.4	59.675	36.34	16.95	80.03	7.331	25.72
Nov.	6.4	59.591	36.15	16.36	82.82	7.246	25.36
	16.3	59.489	35.80	15.67	85.16	7.145	24.86
	26.3	59.376	35.30	14.89	86.99	7.034	24.26
Dec.	6.3	59.259	34.66	14.03	88.28	6.917	23.57
	16.2	59.138	33.94	13.13	88.97	6.797	22.83
	26.2	59.018	33.12	12.22	89.03	6.679	22.05
	36.2	58.906	32.26	11.32	88.47	6.566	21.25
Mean Place		56.248	12.26	8.07	49.29	3.962	2.32
Sec δ, Tan δ		1.004	+0.091	4.513	+4.400	1.000	+0.024
L α, L δ		0.00	+0.4	-0.01	+0.4	0.00	+0.4
ω α, ω δ		-0.01	-0.1	-0.29	-0.1	0.00	-0.1
AUTHORITY		A. E.		A. E.			

430 APPARENT PLACES OF STARS, 1922.

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		δ Sculptoris. Mag. 4·6		φ Pegasi. Mag. 5·2		27 Piscium. Mag. 5·1	
		R. A.	Dec. S.	R. A.	Dec. N.	R. A.	Dec. S.
		<sup>h</sup> 23 <sup>s</sup> 44 <sup>m</sup>	<sup>°</sup> 28 <sup>'</sup> 33 <sup>"</sup>	<sup>h</sup> 23 <sup>m</sup> 48 <sup>s</sup>	<sup>°</sup> 18 <sup>'</sup> 41 <sup>"</sup>	<sup>h</sup> 23 <sup>m</sup> 54 <sup>s</sup>	<sup>°</sup> 3 <sup>'</sup> 58 <sup>"</sup>
Jan.	1·2	51·464 <sup>137</sup>	51·85 <sup>1</sup>	31·213 <sup>124</sup>	20·61 <sup>104</sup>	40·764 <sup>112</sup>	80·28 <sup>68</sup>
	11·2	51·327 <sup>119</sup>	51·86 <sup>29</sup>	31·089 <sup>119</sup>	19·57 <sup>116</sup>	40·652 <sup>104</sup>	80·96 <sup>57</sup>
	21·2	51·208 <sup>101</sup>	51·57 <sup>62</sup>	30·970 <sup>101</sup>	18·41 <sup>130</sup>	40·548 <sup>91</sup>	81·53 <sup>46</sup>
	31·1	51·107 <sup>80</sup>	50·95 <sup>90</sup>	30·869 <sup>83</sup>	17·11 <sup>134</sup>	40·457 <sup>74</sup>	81·99 <sup>33</sup>
Feb.	10·1	51·027 <sup>52</sup>	50·05 <sup>120</sup>	30·786 <sup>57</sup>	15·77 <sup>132</sup>	40·383 <sup>52</sup>	82·32 <sup>17</sup>
	20·1	50·975 <sup>23</sup>	48·85 <sup>145</sup>	30·729 <sup>29</sup>	14·45 <sup>126</sup>	40·331 <sup>27</sup>	82·49 <sup>2</sup>
Mar.	2·0	50·952 <sup>14</sup>	47·40 <sup>171</sup>	30·700 <sup>5</sup>	13·19 <sup>111</sup>	40·304 <sup>4</sup>	82·47 <sup>23</sup>
	12·0	50·966 <sup>50</sup>	45·69 <sup>192</sup>	30·705 <sup>46</sup>	12·08 <sup>92</sup>	40·308 <sup>39</sup>	82·24 <sup>46</sup>
	22·0	51·016 <sup>93</sup>	43·77 <sup>211</sup>	30·751 <sup>84</sup>	11·16 <sup>65</sup>	40·347 <sup>75</sup>	81·78 <sup>70</sup>
Apr.	1·0	51·109 <sup>131</sup>	41·66 <sup>223</sup>	30·835 <sup>128</sup>	10·51 <sup>37</sup>	40·422 <sup>115</sup>	81·08 <sup>95</sup>
	10·9	51·240 <sup>172</sup>	39·43 <sup>237</sup>	30·963 <sup>168</sup>	10·14 <sup>2</sup>	40·537 <sup>153</sup>	80·13 <sup>119</sup>
	20·9	51·412 <sup>214</sup>	37·06 <sup>240</sup>	31·131 <sup>209</sup>	10·12 <sup>30</sup>	40·690 <sup>191</sup>	78·94 <sup>141</sup>
	30·9	51·626 <sup>247</sup>	34·66 <sup>244</sup>	31·340 <sup>242</sup>	10·42 <sup>67</sup>	40·881 <sup>225</sup>	77·53 <sup>161</sup>
May	10·9	51·873 <sup>281</sup>	32·22 <sup>236</sup>	31·582 <sup>271</sup>	11·09 <sup>100</sup>	41·106 <sup>255</sup>	75·92 <sup>178</sup>
	20·8	52·154 <sup>305</sup>	29·86 <sup>231</sup>	31·853 <sup>296</sup>	12·09 <sup>132</sup>	41·361 <sup>279</sup>	74·14 <sup>190</sup>
	30·8	52·459 <sup>325</sup>	27·55 <sup>211</sup>	32·149 <sup>309</sup>	13·41 <sup>159</sup>	41·640 <sup>296</sup>	72·24 <sup>197</sup>
June	9·8	52·784 <sup>334</sup>	25·44 <sup>188</sup>	32·458 <sup>318</sup>	15·00 <sup>183</sup>	41·936 <sup>305</sup>	70·27 <sup>200</sup>
	19·7	53·118 <sup>335</sup>	23·56 <sup>165</sup>	32·776 <sup>314</sup>	16·83 <sup>204</sup>	42·241 <sup>305</sup>	68·27 <sup>198</sup>
	29·7	53·453 <sup>326</sup>	21·91 <sup>131</sup>	33·090 <sup>306</sup>	18·87 <sup>213</sup>	42·546 <sup>297</sup>	66·29 <sup>187</sup>
July	9·7	53·779 <sup>309</sup>	20·60 <sup>101</sup>	33·396 <sup>286</sup>	21·00 <sup>223</sup>	42·843 <sup>283</sup>	64·42 <sup>174</sup>
	19·7	54·088 <sup>282</sup>	19·59 <sup>61</sup>	33·682 <sup>261</sup>	23·23 <sup>225</sup>	43·126 <sup>260</sup>	62·68 <sup>157</sup>
	29·6	54·370 <sup>252</sup>	18·98 <sup>25</sup>	33·943 <sup>229</sup>	25·48 <sup>220</sup>	43·386 <sup>231</sup>	61·11 <sup>135</sup>
Aug.	8·6	54·622 <sup>215</sup>	18·73 <sup>14</sup>	34·172 <sup>195</sup>	27·68 <sup>215</sup>	43·617 <sup>198</sup>	59·76 <sup>112</sup>
	18·6	54·837 <sup>170</sup>	18·87 <sup>49</sup>	34·367 <sup>156</sup>	29·83 <sup>199</sup>	43·815 <sup>161</sup>	58·64 <sup>85</sup>
	28·6	55·007 <sup>125</sup>	19·36 <sup>83</sup>	34·523 <sup>116</sup>	31·82 <sup>184</sup>	43·976 <sup>122</sup>	57·79 <sup>59</sup>
Sept.	7·5	55·132 <sup>82</sup>	20·19 <sup>112</sup>	34·639 <sup>75</sup>	33·66 <sup>166</sup>	44·098 <sup>83</sup>	57·20 <sup>33</sup>
	17·5	55·214 <sup>36</sup>	21·31 <sup>131</sup>	34·714 <sup>38</sup>	35·32 <sup>144</sup>	44·181 <sup>45</sup>	56·87 <sup>9</sup>
	27·5	55·250 <sup>9</sup>	22·62 <sup>152</sup>	34·752 <sup>3</sup>	36·76 <sup>121</sup>	44·226 <sup>9</sup>	56·78 <sup>14</sup>
Oct.	7·5	55·241 <sup>45</sup>	24·14 <sup>161</sup>	34·755 <sup>30</sup>	37·97 <sup>98</sup>	44·235 <sup>22</sup>	56·92 <sup>34</sup>
	17·4	55·196 <sup>80</sup>	25·75 <sup>163</sup>	34·725 <sup>57</sup>	38·95 <sup>71</sup>	44·213 <sup>51</sup>	57·26 <sup>50</sup>
	27·4	55·116 <sup>104</sup>	27·38 <sup>158</sup>	34·668 <sup>81</sup>	39·66 <sup>47</sup>	44·162 <sup>73</sup>	57·76 <sup>62</sup>
Nov.	6·4	55·012 <sup>126</sup>	28·96 <sup>147</sup>	34·587 <sup>100</sup>	40·13 <sup>23</sup>	44·089 <sup>91</sup>	58·38 <sup>71</sup>
	16·3	54·886 <sup>140</sup>	30·43 <sup>128</sup>	34·487 <sup>114</sup>	40·36 <sup>3</sup>	43·998 <sup>104</sup>	59·09 <sup>77</sup>
	26·3	54·746 <sup>147</sup>	31·71 <sup>111</sup>	34·373 <sup>124</sup>	40·33 <sup>27</sup>	43·894 <sup>113</sup>	59·86 <sup>79</sup>
Dec.	6·3	54·599 <sup>150</sup>	32·82 <sup>79</sup>	34·249 <sup>130</sup>	40·06 <sup>51</sup>	43·781 <sup>118</sup>	60·65 <sup>80</sup>
	16·3	54·449 <sup>147</sup>	33·61 <sup>55</sup>	34·119 <sup>131</sup>	39·55 <sup>73</sup>	43·663 <sup>119</sup>	61·45 <sup>77</sup>
	26·2	54·302 <sup>140</sup>	34·16 <sup>20</sup>	33·988 <sup>129</sup>	38·82 <sup>94</sup>	43·544 <sup>116</sup>	62·22 <sup>71</sup>
	36·2	54·162	34·36	33·859	37·88	43·428	62·93
Mean Place		51·876	43·54	31·023	13·30	40·780	79·51
Sec δ, Tan δ		1·139	—0·544	1·056	+0·338	1·002	—0·070
L α, L δ		0·00	+0·4	0·00	+0·4	0·00	+0·4
ω α, ω δ		+0·04	—0·1	—0·02	—0·1	0·00	0·0
AUTHORITY		A. E.		A. E.		A. N.	

APPARENT PLACES OF STARS, 1922. 431

AT UPPER TRANSIT AT GREENWICH.

Mean Solar Date.		$\omega$ Piscium. Mag. 4.0		$\gamma$ Ceti. Mag. 4.6	
		R. A.	Dec. N.	R. A.	Dec. S.
		<sup>h</sup> 23 <sup>m</sup> 55 <sup>s</sup>	<sup>°</sup> 6 <sup>'</sup> 25	<sup>h</sup> 23 <sup>m</sup> 59 <sup>s</sup>	<sup>°</sup> 17 <sup>'</sup> 45
Jan.	1.2	18.397 <sup>114</sup>	56.40 <sup>86</sup>	44.545 <sup>123</sup>	78.33 <sup>37</sup>
	11.2	18.283 <sup>109</sup>	55.54 <sup>88</sup>	44.422 <sup>113</sup>	78.70 <sup>15</sup>
	21.2	18.174 <sup>93</sup>	54.66 <sup>85</sup>	44.309 <sup>99</sup>	78.85 <sup>9</sup>
	31.1	18.081 <sup>77</sup>	53.81 <sup>80</sup>	44.210 <sup>82</sup>	78.76 <sup>33</sup>
Feb.	10.1	18.004 <sup>56</sup>	53.01 <sup>74</sup>	44.128 <sup>60</sup>	78.43 <sup>57</sup>
	20.1	17.948 <sup>29</sup>	52.27 <sup>57</sup>	44.068 <sup>34</sup>	77.86 <sup>82</sup>
Mar.	2.0	17.919 <sup>2</sup>	51.70 <sup>38</sup>	44.034 <sup>2</sup>	77.04 <sup>106</sup>
	12.0	17.921 <sup>40</sup>	51.32 <sup>18</sup>	44.032 <sup>33</sup>	75.98 <sup>130</sup>
Apr.	22.0	17.961 <sup>76</sup>	51.14 <sup>5</sup>	44.065 <sup>71</sup>	74.68 <sup>152</sup>
	1.0	18.037 <sup>116</sup>	51.19 <sup>35</sup>	44.136 <sup>110</sup>	73.16 <sup>172</sup>
	10.9	18.153 <sup>155</sup>	51.54 <sup>65</sup>	44.246 <sup>150</sup>	71.44 <sup>190</sup>
	20.9	18.308 <sup>195</sup>	52.19 <sup>88</sup>	44.396 <sup>190</sup>	69.54 <sup>204</sup>
May	30.9	18.503 <sup>230</sup>	53.07 <sup>118</sup>	44.586 <sup>226</sup>	67.50 <sup>214</sup>
	10.9	18.733 <sup>255</sup>	54.25 <sup>144</sup>	44.812 <sup>257</sup>	65.36 <sup>220</sup>
	20.8	18.988 <sup>282</sup>	55.69 <sup>161</sup>	45.069 <sup>284</sup>	63.16 <sup>220</sup>
	30.8	19.270 <sup>297</sup>	57.30 <sup>181</sup>	45.353 <sup>302</sup>	60.96 <sup>214</sup>
June	9.8	19.567 <sup>305</sup>	59.11 <sup>194</sup>	45.655 <sup>313</sup>	58.82 <sup>203</sup>
	19.7	19.872 <sup>307</sup>	61.05 <sup>201</sup>	45.968 <sup>316</sup>	56.79 <sup>187</sup>
	29.7	20.179 <sup>297</sup>	63.06 <sup>201</sup>	46.284 <sup>310</sup>	54.92 <sup>165</sup>
July	9.7	20.476 <sup>285</sup>	65.07 <sup>198</sup>	46.594 <sup>295</sup>	53.27 <sup>140</sup>
	19.7	20.761 <sup>260</sup>	67.05 <sup>190</sup>	46.889 <sup>274</sup>	51.87 <sup>111</sup>
	29.6	21.021 <sup>229</sup>	68.95 <sup>174</sup>	47.163 <sup>245</sup>	50.76 <sup>79</sup>
	8.6	21.250 <sup>197</sup>	70.69 <sup>163</sup>	47.408 <sup>211</sup>	49.97 <sup>46</sup>
Aug.	18.6	21.447 <sup>160</sup>	72.32 <sup>139</sup>	47.619 <sup>173</sup>	49.51 <sup>13</sup>
	28.6	21.607 <sup>125</sup>	73.71 <sup>119</sup>	47.792 <sup>133</sup>	49.38 <sup>18</sup>
	7.5	21.732 <sup>83</sup>	74.90 <sup>94</sup>	47.925 <sup>90</sup>	49.56 <sup>48</sup>
	17.5	21.815 <sup>44</sup>	75.84 <sup>73</sup>	48.015 <sup>51</sup>	50.04 <sup>74</sup>
Sept.	27.5	21.859 <sup>11</sup>	76.57 <sup>47</sup>	48.066 <sup>12</sup>	50.78 <sup>94</sup>
	7.5	21.870 <sup>19</sup>	77.04 <sup>27</sup>	48.078 <sup>23</sup>	51.72 <sup>110</sup>
	17.4	21.851 <sup>48</sup>	77.31 <sup>5</sup>	48.055 <sup>53</sup>	52.82 <sup>121</sup>
	27.4	21.803 <sup>68</sup>	77.36 <sup>11</sup>	48.002 <sup>79</sup>	54.03 <sup>124</sup>
Oct.	6.4	21.735 <sup>91</sup>	77.25 <sup>30</sup>	47.923 <sup>98</sup>	55.27 <sup>123</sup>
	16.3	21.644 <sup>103</sup>	76.95 <sup>45</sup>	47.825 <sup>113</sup>	56.50 <sup>116</sup>
	26.3	21.541 <sup>113</sup>	76.50 <sup>55</sup>	47.712 <sup>123</sup>	57.66 <sup>104</sup>
Nov.	6.3	21.428 <sup>117</sup>	75.95 <sup>67</sup>	47.589 <sup>129</sup>	58.70 <sup>90</sup>
	16.3	21.311 <sup>120</sup>	75.28 <sup>78</sup>	47.460 <sup>129</sup>	59.60 <sup>71</sup>
	26.2	21.191 <sup>118</sup>	74.50 <sup>84</sup>	47.331 <sup>126</sup>	60.31 <sup>52</sup>
	36.2	21.073	73.66	47.205	60.83
Mean Place		18.296	53.58	44.702	72.68
Sec $\delta$ , Tan $\delta$		1.006	+0.113	1.050	-0.320
L $\alpha$ , L $\delta$		0.00	+0.4	0.00	+0.4
$\omega$ $\alpha$ , $\omega$ $\delta$		-0.01	0.0	+0.02	0.0
AUTHORITY		A. E.		A. N.	

## 432 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "		' "	' "
Jan. 0	Moon I. U.	2.3	20 26 30.97	125.39	63.49	S. 14 21 11.2	+386.8	14 51.48	54 26.16
	Moon I. L.	-	20 51 22.03	123.15	62.93	12 59 23.3	+430.2	14 49.31	54 18.21
1	Moon I. U.	3.4	21 15 47.23	121.09	62.41	S. 11 29 28.6	+467.9	14 47.59	54 11.87
	Moon I. L.	-	21 39 49.20	119.29	61.97	9 52 35.7	+500.0	14 46.35	54 7.37
2	Moon I. U.	4.4	22 3 31.32	117.79	61.60	S. 8 9 50.9	+526.6	14 45.68	54 4.89
	Moon I. L.	-	22 26 57.66	116.66	61.33	6 22 17.4	+548.1	14 45.60	54 4.60
3	Moon I. U.	5.4	22 50 12.89	115.95	61.17	S. 4 30 55.9	+564.7	14 46.16	54 6.68
	Moon I. L.	-	23 13 22.10	115.67	61.13	2 36 44.6	+576.4	14 47.40	54 11.22
263	B. Aquarii	6.1	22 57 29			5 8			
316	B. Aquarii	6.5	23 16 13			4 21			
4	Moon I. U.	6.5	23 36 30.75	115.86	61.21	S. 0 40 40.8	+583.4	14 49.36	54 18.39
	Moon I. L.	-	23 59 44.63	116.54	61.41	N. 1 16 18.9	+585.7	14 52.04	54 28.21
60	B. Piscium	6.0	23 50 47			S. 0 19			
80	B. Piscium	6.3	0 1 4			S. 0 56			
5	Moon I. U.	7.5	0 23 9.74	117.73	61.74	N. 3 13 16.2	+583.0	14 55.46	54 40.74
	Moon I. L.	-	0 46 52.21	119.44	62.22	5 9 10.3	+575.1	14 59.63	54 56.00
147	B. Piscium	5.9	0 44 18			4 53			
171	B. Piscium	6.3	0 55 47			6 4			
6	Moon I. U.	8.5	1 10 58.28	121.66	62.82	N. 7 2 55.7	+561.5	15 4.51	55 13.90
	Moon I. L.	-	1 35 34.13	124.40	63.54	8 53 20.7	+541.6	15 10.09	55 34.33
$\mu$	Piscium	5.0	1 26 6			5 45			
0	Piscium	4.5	1 41 17			8 46			
7	Moon I. U.	9.6	2 0 45.67	127.61	64.36	N. 10 39 6.3	+514.8	15 16.31	55 57.15
	Moon I. L.	-	2 26 38.39	131.25	65.29	12 18 44.2	+480.2	15 23.12	56 22.07
$\xi$	Arietis	5.5	2 20 39			10 15			
31	Arietis	5.7	2 32 24			12 7			
8	Moon I. U.	10.6	2 53 17.01	135.24	66.29	N. 13 50 36.7	+437.1	15 30.41	56 48.79
	Moon I. L.	-	3 20 45.17	139.48	67.33	15 12 57.4	+384.7	15 38.08	57 16.87
147	B. Arietis	5.8	3 2 8			12 53			
30	B. Tauri	6.4	3 33 26			15 11			
9	Moon I. U.	11.6	3 49 4.93	143.82	68.37	N. 16 23 51.7	+322.6	15 45.98	57 45.82
	Moon I. L.	-	4 18 16.38	148.06	69.38	17 21 21.7	+250.7	15 53.94	58 14.99
48	Tauri	6.3	4 11 22			15 12			
264	B. Tauri	4.8	4 26 7			16 1			
10	Moon I. U.	12.7	4 48 17.23	152.01	70.30	N. 18 3 30.5	+169.2	16 1.79	58 43.79
	Moon I. L.	-	5 19 2.59	155.44	71.08	18 28 30.1	+79.4	16 9.35	59 11.47
$m$	Tauri	5.0	5 2 52			18 32			
115	Tauri	5.3	5 22 39			17 54			
11	Moon I. U.	13.7	5 50 24.99	158.15	71.69	N. 18 34 50.3	-17.0	16 16.38	59 37.24
	Moon I. L.	-	6 22 14.73	159.98	72.09	18 21 27.1	-117.3	16 22.68	60 0.33
292	B. Orionis	6.5	6 16 55			17 48			
B.D. +17° 1275		6.2	6 26 41			N. 16 59			

# MOON-CULMINATING STARS, 1922. 433

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	"	"
Jan. 12	Moon I. <b>U.</b>	14.7	6 54 20.56	160.83	72.28	N. 17 47 51.4	-218.5	16 28.08	60 20.10
	Moon I. <b>L.</b>	-	7 26 30.69	160.70	72.24	16 54 14.3	-317.0	16 32.39	60 35.88
	λ Geminorum	3.6	7 13 39			16 41			
	f Geminorum	5.3	7 35 0			17 51			
13	Moon II. <b>U.</b>	15.8	8 0 57.82	159.63	72.00	N. 15 41 28.3	-409.4	16 35.48	60 47.22
	29 Cancri	5.9	8 24 18			14 28			
	Δ <sup>1</sup> Cancri	5.5	8 38 56			12 57			
14	Moon II. <b>L.</b>	-	8 32 43.31	157.85	71.59	N. 14 11 5.4	-492.7	16 37.29	60 53.84
	Moon II. <b>U.</b>	16.8	9 4 4.05	155.54	71.06	12 25 10.5	-564.4	16 37.77	60 55.60
	h Leonis	5.2	9 27 48			10 3			
	18 Leonis	5.8	9 42 13			12 10			
15	Moon II. <b>L.</b>	-	9 34 54.98	152.92	70.46	N. 10 26 13.2	-622.9	16 36.95	60 52.60
	Moon II. <b>U.</b>	17.9	10 5 13.64	150.19	69.83	8 16 57.9	-667.3	16 34.91	60 45.11
	48 Leonis	5.2	10 30 45			7 21			
	37 Sextantis	6.3	10 42 3			6 47			
16	Moon II. <b>L.</b>	-	10 34 59.79	147.53	69.21	N. 6 0 15.3	-697.4	16 31.76	60 33.58
	Moon II. <b>U.</b>	18.9	11 4 15.13	145.07	68.64	3 38 54.5	-713.8	16 27.64	60 18.50
	7 Leonis	5.2	11 23 57			3 17			
	9 B. Virginis	6.2	11 45 4			0 7			
17	Moon II. <b>L.</b>	-	11 33 2.75	142.92	68.14	N. 1 15 37.4	-717.0	16 22.73	60 0.51
	Moon II. <b>U.</b>	19.9	12 1 26.62	141.13	67.72	S. 1 7 5.0	-708.2	16 17.21	59 40.24
	162 B. Virginis	6.2	12 23 52			4 11			
	319 B. Virginis	6.3	12 43 32			5 53			
18	Moon II. <b>L.</b>	-	12 29 31.30	139.72	67.39	S. 3 26 54.9	-688.4	16 11.22	59 18.33
	Moon II. <b>U.</b>	21.0	12 57 21.37	138.69	67.14	5 41 47.8	-658.9	16 4.96	58 55.38
	72 Virginis	6.1	13 26 22			6 4			
	m Virginis	5.2	13 37 32			8 19			
19	Moon II. <b>L.</b>	-	13 25 1.17	138.00	66.98	S. 7 49 53.2	-620.6	15 58.57	58 31.96
	Moon II. <b>U.</b>	22.0	13 52 34.66	137.62	66.89	9 49 32.4	-574.7	15 52.16	58 8.48
	2 Libræ	6.3	14 19 14			11 21			
	6 B. Libræ	6.2	14 32 51			11 58			
20	Moon II. <b>L.</b>	-	14 20 5.03	137.47	66.85	S. 11 39 19.7	-522.1	15 45.86	57 45.38
	Moon II. <b>U.</b>	23.0	14 47 34.64	137.48	66.84	13 17 59.7	-463.7	15 39.74	57 22.96
	o Libræ	6.2	15 16 40			15 16			
	ζ Libræ	5.6	15 28 31			16 35			
21	Moon II. <b>L.</b>	-	15 15 4.86	137.56	66.84	S. 14 44 28.3	-400.3	15 33.85	57 1.41
	Moon II. <b>U.</b>	24.1	15 42 36.02	137.62	66.83	15 57 51.8	-333.0	15 28.27	56 40.97
22	Moon II. <b>L.</b>	-	16 10 7.39	137.58	66.79	S. 16 57 27.9	-262.6	15 23.01	56 21.68
	Moon II. <b>U.</b>	25.1	16 37 37.31	137.37	66.71	17 42 45.9	-190.1	15 18.08	56 3.64
23	Moon II. <b>L.</b>	-	17 5 3.24	136.91	66.56	S. 18 13 26.7	-116.6	15 13.51	55 46.84
	Moon II. <b>U.</b>	26.2	17 32 22.08	136.18	66.34	S. 18 29 24.5	-43.1	15 9.27	55 31.33

# 434 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	"
Jan.	24 Moon II. L.	-	17 59 30.35	135.15	66.05	S. 18 30 46.1	+ 29.3	15 5.36	55 17.00
	Moon II. U.	27.2	18 26 24.47	133.83	65.68	18 17 50.5	+ 99.6	15 1.78	55 3.88
	25 Moon II. L.	-	18 53 1.15	132.25	65.25	S. 17 51 8.8	+ 166.8	14 58.52	54 51.92
	Moon II. U.	28.2	19 19 17.52	130.45	64.76	17 11 22.9	+ 230.2	14 55.56	54 41.11
	26 Moon II. L.	-	19 45 11.39	128.51	64.24	S. 16 19 22.9	+ 289.0	14 52.91	54 31.40
	Moon II. U.	29.3	20 10 41.42	126.49	63.71	15 16 7.0	+ 342.8	14 50.58	54 22.85
	27 Moon II. L.	-	20 35 47.12	124.47	63.17	S. 14 2 37.9	+ 391.2	14 48.56	54 15.43
	28 Moon I. U.	0.5	20 58 23.56	122.60	62.66	S. 12 40 1.8	+ 433.9	14 46.86	54 9.22
	Moon I. L.	-	21 22 43.59	120.77	62.19	11 9 26.6	+ 471.0	14 45.50	54 4.25
	29 Moon I. U.	1.6	21 46 42.89	119.15	61.77	S. 9 32 0.5	+ 502.4	14 44.52	54 0.65
	Moon I. L.	-	22 10 24.13	117.77	61.43	7 48 51.1	+ 528.2	14 43.93	53 58.47
	30 Moon I. U.	2.6	22 33 50.64	116.70	61.17	S. 6 1 4.5	+ 548.6	14 43.76	53 57.83
	Moon I. L.	-	22 57 6.24	115.96	61.00	4 9 45.1	+ 563.7	14 44.04	53 58.89
	31 Moon I. U.	3.6	23 20 15.17	115.59	60.93	S. 2 15 56.0	+ 573.6	14 44.82	54 1.79
	Moon I. L.	-	23 43 22.09	115.63	60.98	S. 0 20 38.4	+ 578.5	14 46.15	54 6.64
Feb.	1 Moon I. U.	4.7	0 6 31.92	116.08	61.14	N. 1 35 6.8	+ 578.2	14 48.05	54 13.58
	Moon I. L.	-	0 29 49.83	116.98	61.42	3 30 18.5	+ 572.9	14 50.54	54 22.72
	44 Piscium	6.0	0 21 24			1 30			
	147 B. Piscium	5.9	0 44 17			4 53			
	2 Moon I. U.	5.7	0 53 21.21	118.33	61.82	N. 5 23 55.0	+ 562.3	14 53.67	54 34.17
	Moon I. L.	-	1 17 11.51	120.13	62.33	7 14 51.8	+ 546.2	14 57.44	54 48.01
	88 Piscium	6.2	1 10 39			6 35			
	263 B. Piscium	6.4	1 24 17			7 33			
	3 Moon I. U.	6.7	1 41 26.23	122.40	62.95	N. 9 2 1.3	+ 524.3	15 1.90	55 4.32
	Moon I. L.	-	2 6 10.74	125.10	63.69	10 44 11.1	+ 496.2	15 7.02	55 23.06
	ξ <sup>1</sup> Ceti	4.5	2 8 52			8 29			
	ξ Arietis	5.5	2 20 38			10 15			
	4 Moon I. U.	7.7	2 31 30.16	128.21	64.51	N. 12 20 2.8	+ 461.3	15 12.79	55 44.21
	Moon I. L.	-	2 57 29.13	131.68	65.42	13 48 12.0	+ 419.0	15 19.18	56 7.67
	38 Arietis	5.2	2 40 43			12 7			
	147 B. Arietis	5.8	3 2 7			12 53			
	5 Moon I. U.	8.8	3 24 11.54	135.43	66.37	N. 15 7 7.4	+ 368.9	15 26.17	56 33.25
	Moon I. L.	-	3 51 40.22	139.37	67.35	16 15 11.5	+ 310.4	15 33.67	57 0.74
	148 B. Tauri	5.9	3 48 43			17 6			
	180 B. Tauri	6.1	4 3 33			17 8			
	6 Moon I. U.	9.8	4 19 56.61	143.36	68.32	N. 17 10 42.8	+ 243.4	15 41.59	57 29.74
	Moon I. L.	-	4 49 0.41	147.24	69.25	17 51 58.9	+ 167.9	15 49.81	57 59.84
	302 B. Tauri	6.1	4 41 45			18 36.			
	m Tauri	5.0	5 2 52			N. 18 32			



# MOON-CULMINATING STARS, 1922. 435

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "		' "	' "
Feb. 7	Moon I. U.	10.9	5 18 49.34	150.85	70.10	N. 18 17 20.6	+ 84.5	15 58.16	58 30.48
	Moon I. L.	-	5 49 18.98	154.00	70.82	18 25 19.4	- 5.7	16 6.47	59 0.93
	130 Tauri	5.6	5 42 55			17 42			
	64 Orionis	5.1	5 58 52			19 41			
8	Moon I. U.	11.9	6 20 22.87	156.53	71.39	N. 18 14 43.3	- 101.0	16 14.55	59 30.50
	Moon I. L.	-	6 51 52.85	158.33	71.77	17 44 46.0	- 198.8	16 22.14	59 58.37
	74 B. Geminor.	6.2	6 42 52			18 17			
	110 B. Geminor.	6.2	6 57 55			17 52			
9	Moon I. U.	12.9	7 23 39.57	159.32	71.98	N. 16 55 12.4	- 296.5	16 29.05	60 23.68
	Moon I. L.	-	7 55 33.37	159.51	71.99	15 46 24.9	- 390.6	16 35.04	60 45.59
	1 Cancri	6.0	7 52 36			16 0			
	30 B. Cancri	6.1	8 6 38			14 51			
10	Moon I. U.	14.0	8 27 25.01	158.98	71.84	N. 14 19 23.9	- 478.1	16 39.88	61 3.35
	Moon I. L.	-	8 59 6.38	157.83	71.55	12 35 47.7	- 556.0	16 43.41	61 16.26
	60 Cancri	5.7	8 51 42			11 55			
	209 B. Cancri	6.5	9 5 34			11 53			
11	Moon I. U.	15.0	9 30 31.15	156.24	71.17	N. 10 37 47.7	- 621.7	16 45.50	61 23.91
	7 Leonis	4.9	9 56 7			8 25			
	43 Leonis	6.3	10 18 58			6 56			
12	Moon II. L.	-	10 3 56.32	154.28	70.72	N. 8 28 1.0	- 673.5	16 46.06	61 25.98
	Moon II. U.	16.1	10 34 35.68	152.28	70.25	6 9 22.4	- 710.3	16 45.11	61 22.48
	d Leonis	5.0	10 56 34			4 2			
	75 Leonis	5.4	11 13 18			2 26			
13	Moon II. L.	-	11 4 51.01	150.29	69.79	N. 3 44 55.5	- 731.6	16 42.68	61 13.59
	Moon II. U.	17.1	11 34 43.17	148.43	69.36	N. 1 17 43.8	- 737.8	16 38.90	60 59.74
	31 B. Virginis	6.4	11 57 4			S. 1 20			
	13 Virginis	5.9	12 14 42			0 21			
14	Moon II. L.	-	12 4 14.10	146.76	68.98	S. 1 9 15.4	- 729.7	16 33.91	60 41.48
	Moon II. U.	18.1	12 33 26.33	145.32	68.65	3 33 16.6	- 708.4	16 27.92	60 19.52
	91 G. Virginis	6.5	12 49 38			3 48			
	θ Virginis	4.4	13 5 56			5 7			
15	Moon II. L.	-	13 2 22.71	144.12	68.39	S. 5 51 50.4	- 675.4	16 21.14	59 54.69
	Moon II. U.	19.2	13 31 5.95	143.13	68.17	8 2 45.0	- 632.1	16 13.80	59 27.77
	598 B. Virginis	6.1	13 50 54			7 41			
	96 Virginis	6.5	14 4 52			9 58			
16	Moon II. L.	-	13 59 38.46	142.32	68.00	S. 10 4 7.2	- 580.2	16 6.08	58 59.49
	Moon II. U.	20.2	14 28 2.14	141.64	67.86	11 54 22.2	- 521.2	15 58.20	58 30.64
	13 Libræ	5.7	14 50 10			11 35			
	o Libræ	6.2	15 16 41			15 16			
17	Moon II. L.	-	14 56 18.19	141.04	67.72	S. 13 32 13.5	- 456.5	15 50.35	58 1.87
	Moon II. U.	21.2	15 24 27.02	140.43	67.58	14 56 41.0	- 387.5	15 42.67	57 33.70
	7 Libræ	5.5	15 39 42			15 25			
	49 Libræ	5.4	15 55 58			S. 16 18			

# 436 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semi- pass <sup>s</sup> Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Feb. 18	Moon II. L.	-	15 52 28.34	139.77	67.43	S. 16 7 1.0	-315.4	15 35.26	57 6.55
	Moon II. U.	22.3	16 20 21.12	139.00	67.23	17 2 44.3	-241.6	15 28.24	56 40.86
	24 Scorpii	5.0	16 37 4			17 35			
	90 B. Ophiuchi	6.5	16 55 12			18 8			
	19								
	Moon II. L.	-	16 48 3.74	138.07	66.99	S. 17 43 35.8	-167.0	15 21.68	56 16.82
	Moon II. U.	23.3	17 15 34.15	136.96	66.69	18 9 32.9	-92.7	15 15.63	55 54.63
	305 B. Ophiuchi	6.3	17 51 20			18 47			
	6 Sagittarii	6.5	17 56 51			17 9			
	20								
20	Moon II. L.	-	17 42 50.07	135.66	66.34	S. 18 20 45.2	-19.7	15 10.12	55 34.43
	Moon II. U.	24.4	18 9 49.14	134.16	65.93	18 17 32.9	+51.3	15 5.17	55 16.28
	21								
	Moon II. L.	-	18 36 29.24	132.50	65.47	S. 18 0 25.6	+119.4	15 0.77	55 0.17
	Moon II. U.	25.4	19 2 48.52	130.70	64.98	17 30 1.7	+184.0	14 56.91	54 46.02
	22								
	Moon II. L.	-	19 28 45.66	128.81	64.45	S. 16 47 6.4	+244.5	14 53.57	54 33.82
	Moon II. U.	26.4	19 54 19.90	126.89	63.92	15 52 30.7	+300.6	14 50.75	54 23.47
	23								
	Moon II. L.	-	20 19 31.11	124.99	63.38	S. 14 47 10.3	+351.9	14 48.40	54 14.86
23	Moon II. U.	27.5	20 44 19.84	123.15	62.87	13 32 4.2	+398.2	14 46.51	54 7.97
	24								
	Moon II. L.	-	21 8 47.26	121.44	62.39	S. 12 8 14.2	+439.3	14 45.06	54 2.64
	Moon II. U.	28.5	21 32 55.10	119.90	61.96	10 36 43.3	+475.0	14 44.02	53 58.82
	25								
	Moon II. L.	-	21 56 45.67	118.57	61.59	S. 8 58 35.8	+505.4	14 43.37	53 56.44
	Moon II. U.	29.5	22 20 21.72	117.48	61.29	7 14 56.4	+530.3	14 43.10	53 55.45
	26								
	Moon I. L.	-	22 41 44.28	116.71	61.07	S. 5 26 49.7	+549.9	14 43.20	53 55.81
	27								
27	Moon I. U.	0.8	23 5 1.39	116.19	60.93	S. 3 35 20.7	+564.1	14 43.68	53 57.56
	Moon I. L.	-	23 28 14.25	116.01	60.90	S. 1 41 34.0	+572.8	14 44.52	54 0.65
	28								
	Moon I. U.	1.8	23 51 26.88	116.16	60.96	N. 0 13 25.6	+576.2	14 45.75	54 5.15
	Moon I. L.	-	0 14 43.45	116.67	61.12	2 8 32.8	+574.1	14 47.38	54 11.13
	Mar. 1								
	Moon I. U.	2.8	0 38 8.34	117.54	61.39	N. 4 2 42.0	+566.5	14 49.52	54 18.62
	Moon I. L.	-	1 1 45.94	118.79	61.75	5 54 46.4	+553.3	14 51.91	54 27.73
	2								
	Moon I. U.	3.8	1 25 40.69	120.40	62.22	N. 7 43 37.5	+534.3	14 54.86	54 38.53
2	Moon I. L.	-	1 49 56.91	122.37	62.78	9 28 4.9	+509.3	14 58.28	54 51.09
	3								
	Moon I. U.	4.9	2 14 38.84	124.68	63.42	N. 11 6 55.6	+478.1	15 2.22	55 5.50
	Moon I. L.	-	2 39 50.39	127.30	64.14	12 38 53.6	+440.5	15 6.68	55 21.83
	25 Arietis	6.5	2 23 15			9 51			
	38 Arietis	5.2	2 40 43			12 7			
	4								
	Moon I. U.	5.9	3 5 34.99	130.18	64.92	N. 14 2 40.0	+396.1	15 11.67	55 40.12
	Moon I. L.	-	3 31 55.52	133.27	65.74	15 16 52.7	+344.8	15 17.18	56 0.33
	30 B. Tauri	6.4	3 33 25			15 10			
148	B. Tauri	5.9	3 48 43			17 6			
	5								
	Moon I. U.	6.9	3 58 53.94	136.48	66.57	N. 16 20 7.6	+286.5	15 23.22	56 22.45
	Moon I. L.	-	4 26 31.27	139.73	67.40	17 10 59.8	+221.1	15 29.74	56 46.33
	63 Tauri	5.7	4 18 57			16 36			
	89 Tauri	5.8	4 33 42			N. 15 53			

# MOON-CULMINATING STARS, 1922. 437

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of Q's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of Q's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "		' "	' "
Mar. 6	Moon I. U.	8.0	4 54 47.23	142.91	68.20	N. 17 48 5.9	+148.8	15 36.70	57 11.83
	Moon I. L.	-	5 23 40.26	145.89	68.92	18 10 6.7	+70.3	15 44.02	57 38.64
	111 Tauri	5.1	5 19 53			17 19			
	122 Tauri	5.5	5 32 33			16 59			
7	Moon I. U.	9.0	5 53 7.37	148.57	69.57	N. 18 15 51.6	-13.6	15 51.60	58 6.44
	Moon I. L.	-	6 23 4.27	150.84	70.10	18 4 23.1	-101.7	15 59.34	58 34.77
	71 Orionis	5.1	6 10 17			19 11			
	B.D. +17° 1275	6.2	6 26 40			16 59			
8	Moon I. U.	10.1	6 53 25.57	152.62	70.50	N. 17 35 1.2	-192.2	16 7.06	59 3.07
	Moon I. L.	-	7 24 5.16	153.88	70.77	16 47 29.0	-283.1	16 14.60	59 30.71
	λ Geminorum	3.6	7 13 38			16 41			
	68 Geminorum	5.2	7 29 11			15 59			
9	Moon I. U.	11.1	7 54 56.59	154.60	70.91	N. 15 41 55.9	-371.9	16 21.76	59 56.97
	Moon I. L.	-	8 25 53.65	154.83	70.93	14 19 0.8	-456.3	16 28.33	60 21.03
	30 B. Cancri	6.1	8 6 38			14 51			
	90 B. Cancri	6.3	8 31 47			15 35			
10	Moon I. U.	12.1	8 56 50.74	154.62	70.85	N. 12 39 53.4	-533.5	16 34.10	60 42.15
	Moon I. L.	-	9 27 43.28	154.09	70.69	10 46 13.4	-601.3	16 38.84	60 59.51
	222 B. Cancri	6.3	9 13 40			11 49			
	0 Leonis	3.8	9 37 1			10 15			
11	Moon I. U.	13.2	9 58 27.90	153.32	70.48	N. 8 40 7.5	-657.5	16 42.38	61 12.49
	Moon I. L.	-	10 29 2.46	152.43	70.25	6 24 5.8	-700.4	16 44.57	61 20.50
	155 B. Leonis	6.5	10 19 14			6 5			
	35 Sextantis	6.1	10 39 20			5 9			
12	Moon I. U.	14.2	10 59 26.10	151.51	70.02	N. 4 0 55.9	-728.7	16 45.29	61 23.15
	79 Leonis	5.5	11 20 4			1 50			
	9 B. Virginis	6.2	11 45 5			0 7			
13	Moon I. L.	-	11 29 38.84	150.63	69.80	N. 1 33 36.5	-741.9	16 44.51	61 20.31
	Moon II. U.	15.3	12 2 0.68	149.80	69.61	S. 0 54 49.7	-739.9	16 42.26	61 12.05
	162 B. Virginis	6.2	12 23 53			4 11			
	319 B. Virginis	6.3	12 43 33			5 53			
14	Moon II. L.	-	12 31 53.99	149.11	69.45	S. 3 21 22.7	-723.2	16 38.59	60 58.63
	Moon II. U.	16.3	13 1 39.57	148.51	69.33	5 43 11.2	-692.7	16 33.66	60 40.55
	72 Virginis	6.1	13 26 23			6 4			
	575 B. Virginis	6.2	13 43 8			9 19			
15	Moon II. L.	-	13 31 18.35	147.97	69.22	S. 7 57 37.6	-649.8	16 27.62	60 18.44
	Moon II. U.	17.3	14 0 50.81	147.44	69.12	10 2 23.2	-596.2	16 20.70	59 53.06
	4 G. Libræ	6.5	14 20 31			11 19			
	6 B. Libræ	6.2	14 32 53			11 59			
16	Moon II. L.	-	14 30 16.78	146.87	69.01	S. 11 55 29.6	-533.6	16 13.10	59 25.21
	Moon II. U.	18.4	14 59 35.39	146.20	68.88	13 35 21.6	-464.1	16 5.05	58 55.72
	0 Libræ	6.2	15 16 41			15 16			
	190 B. Libræ	6.5	15 39 4			S. 14 48			

## 438 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	"	"
Mar. 17	Moon II. L.	-	15 28 45.04	145.37	68.71	S. 15 0 47.0	-389.5	15 56.78	58 25.43
	Moon II. U.	19.4	15 57 43.45	144.33	68.48	16 10 56.4	-311.7	15 48.49	57 54.99
	χ Ophiuchi	4.9	16 22 32			18 17			
	24 Scorpii	5.0	16 37 5			17 35			
18	Moon II. L.	-	16 26 27.94	143.05	68.19	S. 17 5 21.6	-232.4	15 40.33	57 25.10
	Moon II. U.	20.4	16 54 55.58	141.52	67.83	17 43 54.3	-153.2	15 32.46	56 56.30
	125 B. Ophiuchi	6.2	17 3 44			17 30			
	164 B. Ophiuchi	6.0	17 15 22			17 40			
19	Moon II. L.	-	17 23 3.35	139.74	67.40	S. 18 6 43.2	-75.3	15 25.02	56 29.02
	Moon II. U.	21.5	17 50 48.48	137.75	66.91	18 14 11.3	+0.1	15 18.08	56 3.63
	64 B. Sagittarii	6.1	18 10 57			18 41			
	100 B. Sagittarii	5.0	18 26 53			18 27			
20	Moon II. L.	-	18 18 8.68	135.59	66.37	S. 18 6 53.7	+72.2	15 11.74	55 40.38
	Moon II. U.	22.5	18 45 2.21	133.31	65.78	17 45 34.7	+140.3	15 6.04	55 19.48
	187 B. Sagittarii	6.4	19 2 35			18 51			
	45 Sagittarii	6.0	19 17 18			18 27			
21	Moon II. L.	-	19 11 28.02	130.98	65.16	S. 17 11 4.9	+203.9	15 0.99	55 1.02
	Moon II. U.	23.5	19 37 25.91	128.67	64.54	16 24 19.8	+262.8	14 56.64	54 45.03
	9 Sagittarii	5.1	19 53 32			15 42			
	16 B. Capricorni	6.2	20 16 24			15 2			
22	Moon II. L.	-	20 2 56.32	126.42	63.93	S. 15 26 17.9	+316.7	14 52.95	54 31.53
	Moon II. U.	24.6	20 28 0.47	124.30	63.34	14 17 58.8	+365.6	14 49.92	54 20.46
23	Moon II. L.	-	20 52 40.22	122.36	62.80	S. 13 0 23.3	+409.5	14 47.55	54 11.74
	Moon II. U.	25.6	21 16 57.92	120.63	62.30	11 34 32.0	+448.3	14 45.78	54 5.26
24	Moon II. L.	-	21 40 56.46	119.17	61.87	S. 10 1 25.5	+482.0	14 44.59	54 0.92
	Moon II. U.	26.6	22 4 39.06	117.98	61.52	8 22 4.3	+510.7	14 43.95	53 58.57
25	Moon II. L.	-	22 28 9.24	117.10	61.25	S. 6 37 29.2	+534.3	14 43.82	53 58.08
	Moon II. U.	27.7	22 51 30.76	116.54	61.07	4 48 41.2	+552.8	14 44.15	53 59.30
26	Moon II. L.	-	23 14 47.55	116.31	60.98	S. 2 56 42.3	+566.1	14 44.91	54 2.10
	Moon II. U.	28.7	23 38 3.65	116.43	60.99	S. 1 2 35.7	+574.1	14 46.09	54 6.40
27	Moon II. L.	-	0 1 23.17	116.88	61.10	N. 0 52 34.1	+576.6	14 47.63	54 12.02
28	Moon II. U.	29.7	0 24 50.19	117.68	61.31	N. 2 47 40.2	+573.5	14 49.52	54 18.94
	Moon I. L.	-	0 46 25.58	118.75	61.62	4 41 33.6	+564.5	14 51.72	54 27.03
29	Moon I. U.	1.0	1 10 18.95	120.19	62.01	N. 6 33 3.1	+549.4	14 54.25	54 36.28
	Moon I. L.	-	1 34 31.47	121.94	62.50	8 20 54.5	+528.1	14 57.06	54 46.61
30	Moon I. U.	2.0	1 59 6.66	123.97	63.05	N. 10 3 51.4	+500.3	15 0.18	54 58.04
	Moon I. L.	-	2 24 7.66	126.24	63.67	11 40 35.0	+465.8	15 3.61	55 10.58
31	Moon I. U.	3.1	2 49 37.12	128.70	64.35	N. 13 9 44.6	+424.6	15 7.33	55 24.22
	Moon I. L.	-	3 15 37.06	131.31	65.05	N. 14 29 59.0	+376.6	15 11.36	55 38.98

# MOON-CULMINATING STARS, 1922. 439

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Apr. 1	Moon I. U.	4.1	3 42 8.74	133.98	65.77	N. 15 39 56.5	+321.9	15 15.71	55 54.91
	Moon I. L.	-	4 9 12.54	136.64	66.47	16 38 17.4	+260.6	15 20.37	56 12.00
	2 Moon I. U.	5.1	4 36 47.83	139.22	67.15	N. 17 23 45.3	+193.1	15 25.35	56 30.25
	Moon I. L.	-	5 4 53.00	141.61	67.77	17 55 10.2	+120.1	15 30.63	56 49.58
	318 B. Tauri	5.7	4 52 52			17 2			
	111 Tauri	5.1	5 19 53			17 19			
	3 Moon I. U.	6.2	5 33 25.39	143.74	68.32	N. 18 11 29.8	+42.4	15 36.20	57 10.00
	Moon I. L.	-	6 2 21.49	145.55	68.79	18 11 53.8	-38.9	15 42.03	57 31.37
	57 Orionis	5.8	5 50 20			19 44			
	19 B. Geminor.	6.2	6 8 59			18 42			
	4 Moon I. U.	7.2	6 31 37.09	146.99	69.14	N. 17 55 45.7	-122.7	15 48.07	57 53.48
	Moon I. L.	-	7 1 7.60	148.03	69.40	17 22 45.6	-207.3	15 54.23	58 16.08
	110 B. Geminor.	6.2	6 57 54			17 52			
	51 Geminorum	5.3	7 8 55			16 17			
	5 Moon I. U.	8.2	7 30 48.37	148.70	69.56	N. 16 32 52.7	-291.2	16 0.45	58 38.85
	Moon I. L.	-	8 0 35.01	149.02	69.62	15 26 26.8	-372.6	16 6.61	59 1.42
	1 Cancri	6.0	7 52 35			16 0			
	30 B. Cancri	6.1	8 6 37			14 51			
	6 Moon I. U.	9.3	8 30 23.78	149.06	69.61	N. 14 4 8.7	-449.6	16 12.58	59 23.31
	Moon I. L.	-	9 0 11.74	148.90	69.55	12 27 1.4	-520.5	16 18.23	59 44.01
	60 Cancri	5.7	8 51 42			11 55			
	209 B. Cancri	6.5	9 5 34			11 53			
	7 Moon I. U.	10.3	9 29 56.95	148.62	69.46	N. 10 36 28.8	-583.5	16 23.37	60 2.87
	Moon I. L.	-	9 59 38.51	148.31	69.35	8 34 15.4	-637.0	16 27.87	60 19.33
	83 B. Leonis	5.9	9 52 20			9 18			
	A Leonis	4.6	10 3 48			10 23			
	8 Moon I. U.	11.4	10 29 16.50	148.04	69.25	N. 6 22 23.7	-679.6	16 31.54	60 32.77
	Moon I. L.	-	10 58 51.74	147.86	69.18	4 3 13.7	-709.9	16 34.24	60 42.67
	56 Leonis	6.1	10 52 0			6 36			
	p <sup>4</sup> Leonis	5.7	11 2 58			2 23			
	9 Moon I. U.	12.4	11 28 25.70	147.83	69.15	N. 1 39 17.9	-727.1	16 35.84	60 48.52
	Moon I. L.	-	11 58 0.16	147.94	69.15	S. 0 46 41.5	-730.4	16 36.24	60 49.99
	β Virginis	3.8	11 46 40			N. 2 12			
	31 B. Virginis	6.4	11 57 4			S. 1 20			
	10 Moon I. U.	13.4	12 27 36.85	148.20	69.20	S. 3 11 56.1	-719.7	16 35.38	60 46.85
	Moon I. L.	-	12 57 17.24	148.55	69.28	5 33 37.8	-695.0	16 33.26	60 39.08
	91 G. Virginis	6.5	12 49 39			3 48			
	θ Virginis	4.4	13 5 57			5 8			
	11 Moon II. U.	14.5	13 29 20.91	148.96	69.37	S. 7 49 3.1	-657.1	16 29.92	60 26.84
	598 B. Virginis	6.1	13 50 55			7 41			
	96 Virginis	6.5	14 4 53			S. 9 58			

# 440 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Std. Time of Semid. pass Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "			
Apr. 12	Moon II. L.	-	13 59 10.57	149.31	69.46	S. 9 55 38.8	-606.9	16 25.45	60 10.47
	Moon II. U.	15.5	14 29 3.68	149.52	69.53	11 51 7.1	-546.1	16 19.95	59 50.35
	13 Libræ	5.7	14 50 11			11 35			
	o Libræ	6.2	15 16 42			15 16			
13	Moon II. L.	-	14 58 58.01	149.49	69.55	S. 13 33 30.2	-476.4	16 13.63	59 27.14
	Moon II. U.	16.5	15 28 50.24	149.15	69.49	15 1 13.8	-399.9	16 6.65	59 1.57
	η Libræ	5.5	15 39 43			15 26			
	θ Libræ	4.4	15 49 25			16 30			
14	Moon II. L.	-	15 58 36.12	148.42	69.35	S. 16 13 9.3	-318.8	15 59.18	58 34.23
	Moon II. U.	17.6	16 28 10.72	147.27	69.10	17 8 34.3	-235.2	15 51.46	58 5.94
	78 B. Ophiuchi	6.5	16 51 34			16 41			
	125 B. Ophiuchi	6.2	17 3 45			17 30			
15	Moon II. L.	-	16 57 28.85	145.68	68.75	S. 17 47 12.5	-151.3	15 43.66	57 37.34
	Moon II. U.	18.6	17 26 25.43	143.68	68.29	18 9 10.4	-68.8	15 35.96	57 9.11
	305 B. Ophiuchi	6.3	17 51 22			18 47			
	32 G. Sagittarii	5.7	18 3 19			17 10			
16	Moon II. L.	-	17 54 55.90	141.34	67.74	S. 18 14 55.1	+10.7	15 28.50	56 41.78
	Moon II. U.	19.7	18 22 56.52	138.73	67.12	18 5 9.7	+86.1	15 21.42	56 15.84
	155 B. Sagittarii	5.5	18 51 3			16 28			
	187 B. Sagittarii	6.4	19 2 36			18 51			
17	Moon II. L.	-	18 50 24.65	135.94	66.43	S. 17 40 49.6	+156.4	15 14.83	55 51.70
	Moon II. U.	20.7	19 17 18.76	133.08	65.72	17 2 57.7	+221.3	15 8.82	55 29.68
	54 Sagittarii	5.4	19 36 17			16 28			
	9 Sagittarii	5.1	19 53 33			15 42			
18	Moon II. L.	-	19 43 38.58	130.24	65.00	S. 16 12 42.0	+280.4	15 3.45	55 10.02
	Moon II. U.	21.7	20 9 24.92	127.51	64.29	15 11 11.7	+333.7	14 58.78	54 52.89
	45 B. Capricorni	6.1	20 29 52			13 59			
	84 B. Capricorni	6.0	20 46 25			12 50			
19	Moon II. L.	-	20 34 39.57	124.97	63.62	S. 13 59 35.9	+381.3	14 54.83	54 38.42
	Moon II. U.	22.8	20 59 25.18	122.68	63.00	12 39 1.9	+423.4	14 51.61	54 26.63
	18 Aquarii	5.5	21 19 56			13 13			
	137 B. Capricorni	6.2	21 35 17			10 56			
20	Moon II. L.	-	21 23 45.08	120.69	62.45	S. 11 10 34.8	+460.2	14 49.12	54 17.50
	Moon II. U.	23.8	21 47 43.08	119.04	61.98	9 35 17.0	+491.9	14 47.35	54 11.02
	θ Aquarii	4.3	22 12 43			8 10			
	170 B. Aquarii	6.0	22 19 27			7 35			
21	Moon II. L.	-	22 11 23.46	117.76	61.61	S. 7 54 8.8	+518.6	14 46.28	54 7.11
	Moon II. U.	24.8	22 34 50.73	116.85	61.35	6 8 9.1	+540.5	14 45.88	54 5.64
22	Moon II. L.	-	22 58 9.51	116.35	61.16	S. 4 18 16.1	+557.5	14 46.11	54 6.49
	Moon II. U.	25.9	23 21 24.66	116.25	61.10	2 25 28.3	+569.6	14 46.94	54 9.50
23	Moon II. L.	-	23 44 40.99	116.54	61.14	S. 0 30 45.1	+576.7	14 48.30	54 14.50
	Moon II. U.	26.9	0 8 3.30	117.24	61.30	N. 1 24 51.7	+578.5	14 50.16	54 21.31

# MOON-CULMINATING STARS, 1922. 441

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of Q's R.A. in 1 hour of Long.	Sid. Time of Semi-d. pass <sup>†</sup> Merid.	Apparent Declination.	Var. of Q's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Apr. 24	Moon II. L.	-	0 31 36.27	118.32	61.56	N. 3 20 17.1	+574.8	14 52.46	54 29.75
	Moon II. U.	27.9	0 55 24.46	119.77	61.92	5 14 22.8	+565.2	14 55.15	54 39.58
25	Moon II. L.	-	1 19 32.13	121.56	62.38	N. 7 5 56.1	+549.3	14 58.17	54 50.67
	Moon II. U.	28.9	1 44 3.23	123.67	62.92	8 53 39.6	+526.8	15 1.49	55 2.8f
26	Moon II. L.	-	2 9 1.18	126.03	63.53	N. 10 36 11.8	+497.4	15 5.05	55 15.82
27	Moon I. U.	0.3	2 32 20.38	128.49	64.20	N. 12 12 7.5	+460.7	15 8.78	55 29.53
	Moon I. L.	-	2 58 18.28	131.18	64.90	13 39 58.6	+416.6	15 12.68	55 43.83
28	Moon I. U.	1.3	3 24 48.93	133.93	65.62	N. 14 58 16.2	+365.0	15 16.70	55 58.58
	Moon I. L.	-	3 51 52.33	136.63	66.32	16 5 32.1	+306.4	15 20.81	56 13.64
29	Moon I. U.	2.4	4 19 27.35	139.18	66.98	N. 17 0 22.2	+240.9	15 25.01	56 29.00
	Moon I. L.	-	4 47 31.58	141.48	67.59	17 41 29.4	+169.4	15 29.25	56 44.54
30	Moon I. U.	3.4	5 16 1.48	143.44	68.10	N. 18 7 46.5	+92.7	15 33.53	57 0.23
	Moon I. L.	-	5 44 52.50	144.99	68.51	18 18 20.1	+12.3	15 37.86	57 16.06
May 1	Moon I. U.	4.4	6 13 59.42	146.08	68.81	N. 18 12 33.0	-70.4	15 42.20	57 31.94
	Moon I. L.	-	6 43 16.65	146.71	68.99	17 50 6.5	-154.0	15 46.52	57 47.82
2	Moon I. U.	5.5	7 12 38.74	146.90	69.06	N. 17 11 1.2	-236.6	15 50.85	58 3.66
	Moon I. L.	-	7 42 0.73	146.71	69.03	16 15 38.0	-316.7	15 55.12	58 19.34
f Geminorum		5.3	7 34 59			17 51			
	1 Cancri	6.0	7 52 35			16 0			
3	Moon I. U.	6.5	8 11 18.56	146.22	68.93	N. 15 4 36.8	-392.7	15 59.33	58 34.76
	Moon I. L.	-	8 40 29.28	145.54	68.77	13 38 55.6	-463.1	16 3.42	58 49.74
90 B. Cancri		6.3	8 31 46			15 35			
	60 Cancri	5.7	8 51 41			11 55			
4	Moon I. U.	7.6	9 9 31.26	144.78	68.58	N. 11 59 48.4	-526.8	16 7.32	59 4.03
	Moon I. L.	-	9 38 24.13	144.04	68.39	10 8 44.0	-582.5	16 10.98	59 17.43
h Leonis		5.2	9 27 48			10 3			
	19 Leonis	6.4	9 43 16			11 56			
5	Moon I. U.	8.6	10 7 8.78	143.42	68.23	N. 8 7 23.7	-629.3	16 14.29	59 29.57
	Moon I. L.	-	10 35 47.07	143.00	68.11	5 57 40.6	-666.2	16 17.19	59 40.18
48 Leonis		5.2	10 30 45			7 21			
	37 Sextantis	6.3	10 42 4			6 47			
6	Moon I. U.	9.6	11 4 21.74	142.83	68.04	N. 3 41 37.4	-692.5	16 19.55	59 48.89
	Moon I. L.	-	11 32 56.07	142.94	68.04	1 21 25.8	-707.5	16 21.32	59 55.36
7	7 Leonis	5.2	11 23 57			3 17			
	9 B. Virginis	6.2	11 45 5			N. 0 7			
162 B. Virginis		6.2	12 23 53			S. 1 0 35.5	-710.7	16 22.37	59 59.20
	319 B. Virginis	6.3	12 43 33			3 22 1.7	-701.6	16 22.64	60 0.17
						4 11			
						S. 5 53			

# 442 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semid. Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
May	8 Moon I. <b>U.</b>	11.7	12 59 10.71	144.91	68.44	S. 5 40 25.1	-680.2	16 22.04	59 58.00
	Moon I. L.	-	13 28 15.68	145.94	68.67	7 53 17.9	-646.5	16 20.56	59 52.57
	72 Virginis	6.1	13 26 24			6 4			
	m Virginis	5.2	13 37 33			8 19			
	9 Moon I. <b>U.</b>	12.7	13 57 33.48	147.02	68.92	S. 9 58 15.3	-601.1	16 18.18	59 43.82
	Moon I. L.	-	14 27 3.96	148.04	69.15	11 53 1.1	-544.8	16 14.92	59 31.84
	2 Libræ	6.3	14 19 16			11 22			
	6 B. Libræ	6.2	14 32 53			11 59			
	10 Moon I. <b>U.</b>	13.8	14 56 45.52	148.85	69.34	S. 13 35 31.2	-478.7	16 10.80	59 16.79
	o Libræ	6.2	15 16 42			15 16			
	γ Libræ	4.0	15 31 12			14 32			
	11 Moon II. L.	-	15 28 53.89	149.34	69.46	S. 15 3 59.1	-404.7	16 5.95	58 58.98
	Moon II. <b>U.</b>	14.8	15 58 46.70	149.37	69.48	16 17 0.1	-324.6	16 0.43	58 38.80
	χ Ophiuchi	4.9	16 22 33			18 17			
	24 Scorpii	5.0	16 37 6			17 36			
	12 Moon II. L.	-	16 28 36.79	148.88	69.38	S. 17 13 34.4	-240.7	15 54.41	58 16.76
	Moon II. <b>U.</b>	15.9	16 58 17.61	147.82	69.14	17 53 9.0	-155.0	15 48.02	57 53.30
	192 B. Ophiuchi	6.3	17 20 6			18 22			
	226 B. Ophiuchi	6.9	17 28 29			17 26			
	13 Moon II. L.	-	17 27 42.33	146.20	68.77	S. 18 15 37.0	-69.9	15 41.40	57 29.04
	Moon II. <b>U.</b>	16.9	17 56 44.49	144.07	68.29	18 21 17.0	+12.7	15 34.71	57 4.53
	17 H <sup>3</sup> Sagittarii	6.4	18 14 11			18 39			
	100 B. Sagittarii	5.0	18 26 54			18 27			
	14 Moon II. L.	-	18 25 18.38	141.51	67.69	S. 18 10 47.9	+91.3	15 28.09	56 40.28
	Moon II. <b>U.</b>	17.9	18 53 19.55	138.64	67.00	17 45 6.2	+164.7	15 21.67	56 16.76
	ρ Sagittarii	4.0	19 17 11			18 0			
	54 Sagittarii	5.4	19 36 17			16 28			
	15 Moon II. L.	-	19 20 45.01	135.58	66.27	S. 17 5 20.1	+232.0	15 15.59	55 54.48
	Moon II. <b>U.</b>	19.0	19 47 33.26	132.46	65.50	16 12 44.8	+292.8	15 9.94	55 33.77
	9 Sagittarii	5.1	19 53 34			15 42			
	16 B. Capricorni	6.2	20 16 25			15 2			
	16 Moon II. L.	-	20 13 44.31	129.40	64.74	S. 15 8 39.1	+347.1	15 4.82	55 14.99
	Moon II. <b>U.</b>	20.0	20 39 19.53	126.50	64.00	13 54 21.3	+394.8	15 0.28	54 58.41
	95 B. Capricorni	5.9	20 54 25			14 47			
	51 G. Aquarii	6.5	21 10 5			10 56			
	17 Moon II. L.	-	21 4 21.40	123.86	63.32	S. 12 31 7.9	+436.4	14 56.41	54 44.24
	Moon II. <b>U.</b>	21.0	21 28 53.37	121.53	62.72	11 0 11.1	+472.1	14 53.25	54 32.65
	c <sup>a</sup> Capricorni	6.3	21 42 8			9 38			
	96 B. Aquarii	6.5	21 49 27			10 41			
18	Moon II. L.	-	21 52 59.58	119.57	62.19	S. 9 22 39.4	+502.3	14 50.82	54 23.73
	Moon II. <b>U.</b>	22.1	22 16 44.72	118.02	61.77	7 39 37.0	+527.3	14 49.13	54 17.54
	167 G. Aquarii	6.3	22 34 18			8 18			
	252 B. Aquarii	5.8	22 51 9			S. 5 24			



# MOON-CULMINATING STARS, 1922. 443

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semid. pass <sup>4</sup> Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
May 19	Moon II. L.	-	22 40 13.87	116.91	61.46	S. 5 52 4.7	+547.3	14 48.18	54 14.09
	Moon II. U.	23.1	23 3 32.37	116.25	61.27	4 1 0.7	+562.6	14 47.98	54 13.35
	316 B. Aquarii	6.5	23 16 14			4 21			
	14 Piscium	5.9	23 30 9			1 41			
	20 Moon II. L.	-	23 26 45.74	116.06	61.19	S. 2 7 21.8	+573.1	14 48.51	54 15.27
	Moon II. U.	24.1	23 49 59.56	116.33	61.23	S. 0 12 4.7	+578.9	14 49.73	54 19.73
	21 Moon II. L.	-	0 13 19.40	117.06	61.40	N. 1 43 52.2	+579.7	14 51.60	54 26.59
	Moon II. U.	25.2	0 36 50.77	118.25	61.69	3 39 28.2	+575.4	14 54.08	54 35.68
	22 Moon II. L.	-	1 0 39.05	119.87	62.09	N. 5 33 38.4	+565.4	14 57.12	54 46.81
	Moon II. U.	26.2	1 24 49.30	121.91	62.60	7 25 13.0	+549.4	15 0.65	54 59.74
	23 Moon II. L.	-	1 49 26.26	124.31	63.20	N. 9 12 56.5	+526.8	15 4.59	55 14.19
	Moon II. U.	27.2	2 14 34.09	127.04	63.89	10 55 26.7	+497.1	15 8.89	55 29.93
24	Moon II. L.	-	2 40 16.16	130.01	64.64	N. 12 31 16.0	+459.8	15 13.46	55 46.66
	Moon II. U.	28.3	3 6 34.92	133.14	65.42	13 58 51.4	+414.7	15 18.19	56 4.05
	25 Moon II. L.	-	3 33 31.63	136.31	66.21	N. 15 16 37.1	+361.5	15 23.05	56 21.82
	Moon II. U.	29.3	4 1 6.06	139.41	66.98	16 22 55.9	+300.3	15 27.93	56 39.69
	26 Moon I. L.	-	4 27 1.09	142.17	67.69	N. 17 16 14.5	+231.6	15 32.74	56 57.33
	27 Moon I. U.	0.8	4 55 42.78	144.71	68.32	N. 17 55 7.1	+156.1	15 37.44	57 14.52
	Moon I. L.	-	5 24 52.24	146.78	68.84	18 18 19.9	+75.2	15 41.93	57 31.01
	28 Moon I. U.	1.8	5 54 23.20	148.28	69.23	N. 18 24 56.7	-9.6	15 46.19	57 46.60
	Moon I. L.	-	6 24 8.50	149.16	69.46	18 14 22.3	-96.3	15 50.16	58 1.15
	29 Moon I. U.	2.9	6 54 0.62	149.42	69.55	N. 17 46 25.3	-183.0	15 53.81	58 14.54
	Moon I. L.	-	7 23 52.27	149.10	69.50	17 1 19.9	-267.4	15 57.14	58 26.74
	30 Moon I. U.	3.9	7 53 37.02	148.29	69.33	N. 15 59 43.9	-347.7	16 0.12	58 37.66
	Moon I. L.	-	8 23 9.70	147.11	69.08	14 42 37.5	-422.2	16 2.76	58 47.33
31	Moon I. U.	4.9	8 52 26.81	145.71	68.76	N. 13 11 19.8	-489.4	16 5.06	58 55.73
	Moon I. L.	-	9 21 26.48	144.23	68.42	11 27 24.9	-548.3	16 7.01	59 2.89
	222 B. Cancri	6.3	9 13 39			11 50			
	ξ Leonis	5.1	9 27 45			11 39			
	June 1 Moon I. U.	6.0	9 50 8.61	142.81	68.08	N. 9 32 38.3	-597.9	16 8.62	59 8.79
	Moon I. L.	-	10 18 34.58	141.56	67.78	7 28 53.3	-637.9	16 9.90	59 13.47
	4 Leonis	4.6	10 3 47			10 23			
	44 Leonis	5.9	10 21 10			9 11			
	2 Moon I. U.	7.0	10 46 47.03	140.57	67.54	N. 5 18 9.4	-667.7	16 10.83	59 16.88
	Moon I. L.	-	11 14 49.55	139.91	67.38	3 2 29.4	-687.2	16 11.41	59 19.00
	p <sup>4</sup> Leonis	5.7	11 2 57			2 23			
	80 Leonis	6.4	11 21 51			4 17			
3	Moon I. U.	8.0	11 42 46.37	139.62	67.30	N. 0 43 58.8	-696.1	16 11.61	59 19.75
	Moon I. L.	-	12 10 41.99	139.72	67.31	S. 1 35 15.2	-694.4	16 11.42	59 19.03
	31 B. Virginis	6.4	11 57 4			1 20			
	η Virginis	4.0	12 15 57			S. 0.14			

## 444 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of Q's R.A. in 1 hour of Long.	Sid. Time of Semid. pass <sup>†</sup> Merid.	Apparent Declination.	Var. of Q's Dec. in 1 hour of Long.	Semi- diameter.	Hor Par.
			h m s	s	s	° ' "	"	"	"
June	4 Moon I. <b>U</b> .	9.1	12 38 40.98	140.17	67.40	S. 3 53 4.1	-681.9	16 10.80	59 16.76
	Moon I. L.	-	13 6 47.44	140.95	67.57	6 7 19.2	-658.8	16 9.73	59 12.86
	<i>k</i> Virginis	5.7	12 55 40			3 24			
	<i>θ</i> Virginis	4.4	13 5 57			5 8			
	5 Moon I. <b>U</b> .	10.1	13 35 4.90	141.99	67.80	S. 8 15 52.8	-625.1	16 8.19	59 7.22
	Moon I. L.	-	14 3 35.88	143.19	68.07	10 16 39.8	-581.8	16 6.15	58 59.74
	598 B. Virginis	6.1	13 50 55			7 41			
	<i>κ</i> Virginis	4.3	14 8 46			9 55			
	6 Moon I. <b>U</b> .	11.2	14 32 21.69	144.44	68.35	S. 12 7 40.0	-527.4	16 3.60	58 50.40
	Moon I. L.	-	15 1 22.10	145.60	68.61	13 47 1.4	-464.8	16 0.54	58 39.17
	13 Libræ	5.7	14 50 11			11 35			
	<i>o</i> Libræ	6.2	15 16 42			15 16			
	7 Moon I. <b>U</b> .	12.2	15 30 35.32	146.55	68.81	S. 15 13 4.0	-394.5	15 56.98	58 26.13
	Moon I. L.	-	15 59 57.91	147.15	68.94	16 24 23.4	-317.9	15 52.95	58 11.38
	<i>θ</i> Libræ	4.4	15 49 26			16 30			
	49 Libræ	5.4	15 56 0			16 18			
	8 Moon I. <b>U</b> .	13.2	16 29 24.96	147.28	68.95	S. 17 19 55.0	-236.8	15 48.51	57 55.08
	Moon I. L.	-	16 58 50.36	146.86	68.85	17 58 56.5	-153.2	15 43.70	57 37.47
	78 B. Ophiuchi	6.5	16 51 35			16 41			
	125 B. Ophiuchi	6.2	17 3 46			17 30			
	9 Moon II. <b>U</b> .	14.3	17 30 24.50	145.81	68.60	S. 18 21 9.7	-69.1	15 38.61	57 18.82
	305 B. Ophiuchi	6.3	17 51 23			18 47			
	32 G. Sagittarii	5.7	18 3 20			17 10			
	10 Moon II. L.	-	17 59 25.28	144.22	68.22	S. 18 26 40.5	+13.5	15 33.31	56 59.42
	Moon II. <b>U</b> .	15.3	18 28 3.76	142.11	67.72	18 15 57.8	+92.9	15 27.93	56 39.70
	155 B. Sagittarii	5.5	18 51 4			16 28			
	187 B. Sagittarii	6.4	19 2 37			18 51			
	11 Moon II. L.	-	18 56 14.36	139.59	67.12	S. 17 49 49.4	+167.6	15 22.54	56 19.98
	Moon II. <b>U</b> .	16.3	19 23 52.70	136.76	66.43	17 9 18.9	+236.4	15 17.26	56 0.63
	283 B. Sagittarii	5.5	19 39 9			15 39			
	<i>g</i> Sagittarii	5.1	19 53 34			15 42			
	12 Moon II. L.	-	19 50 55.96	133.76	65.70	S. 16 15 40.4	+298.8	15 12.20	55 42.05
	Moon II. <b>U</b> .	17.4	20 17 22.87	130.72	64.96	15 10 14.0	+354.4	15 7.42	55 24.56
	7 Capricorni	5.2	20 34 57			15 14			
	84 B. Capricorni	6.0	20 46 26			12 50			
	13 Moon II. L.	-	20 43 13.65	127.76	64.22	S. 13 54 22.7	+403.0	15 3.02	55 8.46
	Moon II. <b>U</b> .	18.4	21 8 29.93	124.99	63.53	12 29 28.2	+444.9	14 59.11	54 54.10
	72 B. Aquarii	6.5	21 24 3			11 54			
	<i>c</i> <sup>1</sup> Capricorni	5.3	21 40 53			9 26			
	14 Moon II. L.	-	21 33 14.40	122.48	62.89	S. 10 56 49.6	+480.4	14 55.73	54 41.73
	Moon II. <b>U</b> .	19.4	21 57 30.75	120.31	62.34	9 17 41.6	+509.9	14 52.95	54 31.55
	150 B. Aquarii	6.0	22 12 47			9 26			
	186 B. Aquarii	6.1	22 27 15			S. 6 57			

# MOON-CULMINATING STARS, 1922. 445

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
June 15	Moon II. L.	-	h m s	s	s	° ' "	"	' "	' "
	Moon II. U.	20.5	22 21 23.35	118.53	61.88	S. 7 33 14.0	+533.8	14 50.82	54 23.74
	263 B. Aquarii	6.1	22 44 57.15	117.18	61.53	5 44 32.5	+552.3	14 49.38	54 18.47
	316 B. Aquarii	6.5	22 57 31			5 8			
16	Moon II. L.	-	23 8 17.48	116.29	61.30	S. 3 52 38.1	+565.9	14 48.67	54 15.85
	Moon II. U.	21.5	23 31 29.96	115.87	61.19	S. 1 58 29.5	+574.7	14 48.69	54 15.94
	21 Piscium	5.6	23 45 29			N. 0 39			
	80 B. Piscium	6.3	0 1 5			S. 0 56			
17	Moon II. L.	-	23 54 40.41	115.95	61.21	S. 0 3 3.4	+578.9	14 49.46	54 18.76
	Moon II. U.	22.5	0 17 54.72	116.52	61.36	N. 1 52 43.9	+578.2	14 50.97	54 24.30
	147 B. Piscium	5.9	0 44 19			4 53			
	171 B. Piscium	6.3	0 55 48			6 4			
18	Moon II. L.	-	0 41 18.84	117.58	61.63	N. 3 47 54.4	+572.7	14 53.22	54 32.52
	Moon II. U.	23.6	1 4 58.69	119.14	62.03	5 41 27.7	+562.0	14 56.16	54 43.30
	263 B. Piscium	6.4	1 24 18			7 34			
	0 Piscium	4.5	1 41 17			8 46			
19	Moon II. L.	-	1 29 0.01	121.16	62.55	N. 7 32 18.9	+545.6	14 59.77	54 56.50
	Moon II. U.	24.6	1 53 28.26	123.62	63.17	9 19 17.8	+523.1	15 3.99	55 11.97
20	Moon II. L.	-	2 18 28.47	126.48	63.89	N. 11 1 7.5	+494.0	15 8.75	55 29.42
	Moon II. U.	25.6	2 44 5.06	129.67	64.69	12 36 23.8	+457.5	15 13.98	55 48.56
21	Moon II. L.	-	3 10 21.49	133.10	65.54	N. 14 3 36.1	+413.2	15 19.58	56 9.12
	Moon II. U.	26.7	3 37 20.07	136.67	66.41	15 21 7.5	+360.6	15 25.47	56 30.70
22	Moon II. L.	-	4 5 1.58	140.24	67.28	N. 16 27 18.0	+299.7	15 31.51	56 52.82
	Moon II. U.	27.7	4 33 25.08	143.64	68.10	17 20 27.4	+230.5	15 37.60	57 15.12
23	Moon II. L.	-	5 2 27.64	146.72	68.83	N. 17 59 0.0	+153.7	15 43.60	57 37.11
	Moon II. U.	28.7	5 32 4.39	149.31	69.46	18 21 31.4	+70.5	15 49.38	57 58.30
24	Moon II. L.	-	6 2 8.58	151.28	69.93	N. 18 26 53.1	-17.5	15 54.82	58 18.26
25	Moon I. U.	0.3	6 30 11.71	152.49	70.23	N. 18 14 20.4	-108.2	15 59.82	58 36.57
	Moon I. L.	-	7 0 45.52	153.02	70.36	17 43 35.2	-199.2	16 4.28	58 52.87
26	Moon I. U.	1.4	7 31 21.23	152.81	70.32	N. 16 54 50.0	-287.8	16 8.09	59 6.86
	Moon I. L.	-	8 1 50.53	151.97	70.14	15 48 47.6	-371.6	16 11.22	59 18.34
27	Moon I. U.	2.4	8 32 6.48	150.61	69.84	N. 14 26 38.8	-448.5	16 13.65	59 27.21
	Moon I. L.	-	9 2 3.89	148.91	69.45	12 49 58.2	-516.6	16 15.34	59 33.40
28	Moon I. U.	3.5	9 31 39.60	147.03	69.02	N. 11 0 39.2	-574.7	16 16.32	59 37.01
	Moon I. L.	-	10 0 52.44	145.12	68.58	9 0 47.8	-621.9	16 16.62	59 38.12
29	Moon I. U.	4.5	10 29 43.05	143.34	68.17	N. 6 52 37.6	-657.8	16 16.31	59 36.94
	Moon I. L.	-	10 58 13.62	141.80	67.81	4 38 25.3	-682.3	16 15.41	59 33.66
	56 Leonis	6.1	10 52 0			6 36			
	p <sup>4</sup> Leonis	5.7	11 2 57			N. 2 23			

# 446 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Std. Time of Semid. pass <sup>s</sup> Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
June 30	Moon I. U.	5.5	11 26 27.51	140.58	67.53	N. 2 20 27.4	-695.5	16 14.01	59 28.54
	Moon I. L.	-	11 54 28.89	139.72	67.33	0 0 57.7	-697.6	16 12.18	59 21.81
	9 B. Virginis	6.2	11 45 4			N. 0 7			
	31 B. Virginis	6.4	11 57 4			S. 1 20			
July 1	Moon I. U.	6.6	12 22 22.37	139.26	67.22	S. 2 17 53.5	-689.2	16 9.95	59 13.67
	Moon I. L.	-	12 50 12.61	139.18	67.20	4 34 1.1	-670.4	16 7.41	59 4.35
	319 B. Virginis	6.3	12 43 33			5 53			
	48 Virginis	6.5	12 59 55			3 15			
2	Moon I. U.	7.6	13 18 4.09	139.46	67.27	S. 6 45 24.2	-641.8	16 4.58	58 53.99
	Moon I. L.	-	13 46 0.74	140.03	67.40	8 50 7.9	-603.9	16 1.52	58 42.77
	m Virginis	5.2	13 37 33			8 19			
	598 B. Virginis	6.1	13 50 56			7 41			
3	Moon I. U.	8.6	14 14 5.65	140.82	67.58	S. 10 46 23.0	-557.2	15 58.23	58 30.75
	Moon I. L.	-	14 42 20.88	141.73	67.78	12 32 27.3	-502.2	15 54.77	58 18.07
	6 B. Libræ	6.2	14 32 53			11 59			
	13 Libræ	5.7	14 50 11			11 35			
4	Moon I. U.	9.7	15 10 47.21	142.65	67.98	S. 14 6 47.1	-439.9	15 51.14	58 4.74
	Moon I. L.	-	15 39 23.97	143.45	68.14	15 27 58.9	-371.1	15 47.35	57 50.85
	ζ Libræ	5.6	15 28 33			16 35			
	θ Libræ	4.4	15 49 26			16 30			
5	Moon I. U.	10.7	16 8 9.04	144.01	68.25	S. 16 34 52.4	-297.0	15 43.42	57 36.43
	Moon I. L.	-	16 36 58.94	144.24	68.28	17 26 32.7	-219.1	15 39.35	57 21.55
	χ Ophiuchi	4.9	16 22 33			18 17			
	24 Scorpii	5.0	16 37 7			17 35			
6	Moon I. U.	11.7	17 5 48.99	144.03	68.20	S. 18 2 22.7	-138.9	15 35.17	57 6.23
	Moon I. L.	-	17 34 33.69	143.34	68.00	18 22 4.7	-58.1	15 30.90	56 50.60
	192 B. Ophiuchi	6.3	17 20 6			18 22			
	305 B. Ophiuchi	6.3	17 51 23			18 47			
7	Moon I. U.	12.8	18 3 7.08	142.14	67.68	S. 18 25 40.9	+21.7	15 26.58	56 34.75
	Moon I. L.	-	18 31 23.28	140.48	67.26	18 13 33.5	+98.9	15 22.22	56 18.77
	95 B. Sagittarii	5.7	18 25 40			18 47			
	155 B. Sagittarii	5.5	18 51 5			16 28			
8	Moon I. U.	13.8	18 59 16.95	138.40	66.73	S. 17 46 22.5	+172.1	15 17.87	56 2.86
	45 Sagittarii	6.0	19 17 21			18 27			
	54 Sagittarii	5.4	19 36 19			16 28			
9	Moon II. L.	-	19 28 55.89	135.89	66.13	S. 17 5 3.0	+240.2	15 13.60	55 47.20
	Moon II. U.	14.9	19 55 51.02	133.27	65.47	16 10 41.9	+302.3	15 9.45	55 31.96
	16 B. Capricorni	6.2	20 16 27			15 2			
	45 B. Capricorni	6.1	20 29 54			13 59			
10	Moon II. L.	-	20 22 13.87	130.54	64.79	S. 15 4 34.0	+357.9	15 5.47	55 17.39
	Moon II. U.	15.9	20 48 3.93	127.82	64.10	13 47 59.6	+406.7	15 1.73	55 3.70
	ν Aquarii	4.5	21 5 24			11 41			
	18 Aquarii	5.5	21 19 59			S. 13 13			

# MOON-CULMINATING STARS, 1922. 447

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of (s) R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of (s) Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	"	"
July 11	Moon II. L.	-	21 13 21.91	125.20	63.45	S. 12 22 19.3	+448.8	14 58.29	54 51.11
	Moon II. U.	16.9	21 38 9.62	122.79	62.84	10 48 54.0	+484.3	14 55.22	54 39.85
	96 B. Aquarii	6.5	21 49 29			10 40			
	θ Aquarii	4.3	22 12 46			8 10			
12	Moon II. L.	-	22 2 29.92	120.64	62.30	S. 9 9 0.9	+513.5	14 52.58	54 30.17
	Moon II. U.	18.0	22 26 26.40	118.83	61.84	7 23 53.9	+536.7	14 50.42	54 22.26
	67 Aquarii	6.4	22 39 13			7 22			
	263 B. Aquarii	6.1	22 57 32			5 8			
13	Moon II. L.	-	22 50 3.33	117.39	61.48	S. 5 34 42.7	+554.3	14 48.80	54 16.32
	Moon II. U.	19.0	23 13 25.43	116.37	61.23	3 42 33.0	+566.5	14 47.77	54 12.55
	13 Piscium	6.4	23 28 0			S. 1 31			
	21 Piscium	5.6	23 45 30			N. 0 39			
14	Moon II. L.	-	23 36 37.84	115.78	61.09	S. 1 48 26.8	+573.7	14 47.37	54 11.09
	Moon II. U.	20.0	23 59 45.94	115.65	61.08	N. 0 6 36.4	+576.0	14 47.64	54 12.09
	98 B. Piscium	6.3	0 13 49			1 16			
	44 Piscium	6.0	0 21 26			1 31			
15	Moon II. L.	-	0 22 55.35	116.00	61.19	N. 2 1 39.1	+573.6	14 48.62	54 15.65
	Moon II. U.	21.0	0 46 11.78	116.82	61.43	3 55 43.6	+566.4	14 50.31	54 21.85
	73 Piscium	6.2	1 0 52			5 14			
	88 Piscium	6.2	1 10 41			6 35			
16	Moon II. L.	-	1 9 41.03	118.13	61.79	N. 5 47 51.5	+554.1	14 52.73	54 30.73
	Moon II. U.	22.1	1 33 28.83	119.92	62.27	7 37 1.5	+536.7	14 55.89	54 42.29
	54 Ceti	6.0	1 46 45			10 40			
	ξ <sup>1</sup> Ceti	4.5	2 8 54			8 29			
17	Moon II. L.	-	1 57 40.83	122.16	62.86	N. 9 22 8.8	+513.6	14 59.76	54 56.49
	Moon II. U.	23.1	2 22 22.37	124.84	63.55	11 2 3.0	+484.4	15 4.33	55 13.22
	38 Arietis	5.2	2 40 44			12 7			
	147 B. Arietis	5.8	3 2 8			12 53			
18	Moon II. L.	-	2 47 38.40	127.90	64.35	N. 12 35 27.7	+448.6	15 9.55	55 32.33
	Moon II. U.	24.1	3 13 33.12	131.27	65.19	14 1 0.3	+405.6	15 15.36	55 53.62
19	Moon II. L.	-	3 40 9.87	134.88	66.09	N. 15 17 11.4	+354.9	15 21.69	56 16.84
	Moon II. U.	25.2	4 7 30.72	138.60	67.00	16 22 26.4	+296.2	15 28.43	56 41.55
20	Moon II. L.	-	4 35 36.20	142.29	67.88	N. 17 15 8.2	+229.4	15 35.50	57 7.43
	Moon II. U.	26.2	5 4 25.00	145.79	68.72	17 53 40.5	+154.7	15 42.73	57 33.93
21	Moon II. L.	-	5 33 53.84	148.94	69.46	N. 18 16 33.3	+ 73.0	15 49.98	58 0.48
	Moon II. U.	27.2	6 3 57.44	151.56	70.07	18 22 28.6	- 14.6	15 57.08	58 26.50
22	Moon II. L.	-	6 34 28.75	153.54	70.52	N. 18 10 27.5	-106.1	16 3.86	58 51.36
	Moon II. U.	28.3	7 5 19.40	154.78	70.80	17 39 57.0	-199.1	16 10.15	59 14.41
23	Moon II. L.	-	7 36 20.35	155.25	70.91	N. 16 50 53.9	-291.0	16 15.79	59 35.03
24	Moon II. U.	29.3	8 7 22.65	155.01	70.84	N. 15 43 48.4	-379.0	16 20.59	59 52.68
	Moon I. L.	-	8 35 56.90	154.19	70.64	N. 14 19 44.0	-460.4	16 24.47	60 6.88

# 448 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Magn.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semi- pass <sup>†</sup> Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
July 25	Moon I. <b>U.</b>	1.0	9 6 39.62	152.86	70.33	N. 12 40 14.7	-532.8	16 27.32	60 17.34
	Moon I. <b>L.</b>	-	9 37 4.22	151.20	69.95	10 47 20.5	-594.3	16 29.09	60 23.82
26	Moon I. <b>U.</b>	2.1	10 7 7.76	149.38	69.53	N. 8 43 20.4	-643.6	16 29.77	60 26.28
	Moon I. <b>L.</b>	-	10 36 49.25	147.55	69.11	6 30 45.7	-680.0	16 29.37	60 24.83
27	Moon I. <b>U.</b>	3.1	11 6 9.37	145.84	68.72	N. 4 12 14.1	-703.1	16 27.97	60 19.72
	Moon I. <b>L.</b>	-	11 35 10.18	144.34	68.38	N. 1 50 23.2	-713.2	16 25.67	60 11.27
28	Moon I. <b>U.</b>	4.1	12 3 54.73	143.13	68.12	S. 0 32 13.5	-710.8	16 22.56	59 59.88
	Moon I. <b>L.</b>	-	12 32 26.64	142.24	67.92	2 53 9.8	-696.6	16 18.79	59 46.07
29	Moon I. <b>U.</b>	5.2	13 0 49.77	141.67	67.80	S. 5 10 8.7	-671.5	16 14.49	59 30.28
	Moon I. <b>L.</b>	-	13 29 7.90	141.40	67.75	7 21 4.4	-636.2	16 9.76	59 12.98
72 m	Virginis	6.1	13 26 24			6 4			
	Virginis	5.2	13 37 33			8 19			
30	Moon I. <b>U.</b>	6.2	13 57 24.34	141.38	67.76	S. 9 24 1.7	-591.9	16 4.76	58 54.64
	Moon I. <b>L.</b>	-	14 25 41.78	141.55	67.80	11 17 17.4	-539.4	15 59.58	58 35.67
2 B. Libræ	Libræ	6.3	14 19 16			11 22			
	B. Libræ	6.2	14 32 53			11 58			
31	Moon I. <b>U.</b>	7.2	14 54 2.03	141.83	67.87	S. 12 59 19.9	-479.9	15 54.31	58 16.37
	Moon I. <b>L.</b>	-	15 22 25.81	142.13	67.93	14 28 50.0	-414.2	15 49.05	57 57.06
o γ	Libræ	6.2	15 16 42			15 16			
	Libræ	4.0	15 31 12			14 32			
Aug. 1	Moon I. <b>U.</b>	8.3	15 50 52.74	142.34	67.96	S. 15 44 41.3	-343.6	15 43.84	57 37.99
	Moon I. <b>L.</b>	-	16 19 21.31	142.38	67.95	16 46 1.4	-269.2	15 38.74	57 19.28
χ 24	Ophiuchi	4.9	16 22 33			18 17			
	Scorpii	5.0	16 37 7			17 35			
2	Moon I. <b>U.</b>	9.3	16 47 48.92	142.17	67.87	S. 17 32 12.4	-192.3	15 33.77	57 1.09
	Moon I. <b>L.</b>	-	17 16 12.10	141.64	67.70	18 2 52.2	-114.2	15 28.98	56 43.54
125 192	B. Ophiuchi	6.2	17 3 46			17 30			
	B. Ophiuchi	6.3	17 20 6			18 22			
3	Moon I. <b>U.</b>	10.3	17 44 26.75	140.74	67.45	S. 18 17 54.6	-36.3	15 24.36	56 26.64
	Moon I. <b>L.</b>	-	18 12 28.51	139.49	67.10	18 17 29.4	+40.1	15 19.94	56 10.45
32 85	G. Sagittarii	5.7	18 3 20			17 10			
	B. Sagittarii	6.0	18 23 27			17 51			
4	Moon I. <b>U.</b>	11.4	18 40 13.01	137.88	66.66	S. 18 2 1.9	+113.9	15 15.72	55 54.97
	Moon I. <b>L.</b>	-	19 7 36.33	135.96	66.15	17 32 11.3	+183.8	15 11.70	55 40.23
187 v	B. Sagittarii	6.4	19 2 38			18 51			
	Sagittarii	4.4	19 17 19			16 6			
5	Moon I. <b>U.</b>	12.4	19 34 35.14	133.80	65.58	S. 16 48 49.0	+249.0	15 7.90	55 26.28
	Moon I. <b>L.</b>	-	20 1 7.00	131.49	64.97	15 52 56.4	+308.8	15 4.30	55 13.12
g 16	Sagittarii	5.1	19 53 35			15 42			
	B. Capricorni	6.2	20 16 27			S. 15 2			

# MOON-CULMINATING STARS, 1922. 449

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semi- pass <sup>r</sup> Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m. s	s	s	° ' "	"	' "	' "
Aug. 6	Moon I. <b>U.</b>	13.5	20 27 10.50	129.09	64.34	S. 14 45 42.0	+362.6	15 0.94	55 0.81
	Moon I. <b>L.</b>	-	20 52 45.21	126.70	63.72	13 28 19.2	+410.1	14 57.84	54 49.44
	84 B. Capricorni	6.0	20 46 27			12 50			
	ν Aquarii	4.5	21 5 24			11 41			
7	Moon II. <b>U.</b>	14.5	21 19 57.96	124.31	63.12	S. 12 2 3.9	+451.3	14 54.99	54 39.00
	137 B. Capricorni	6.2	21 35 20			10 55			
	96 B. Aquarii	6.5	21 49 29			10 40			
8	Moon II. <b>L.</b>	-	21 44 36.67	122.18	62.56	S. 10 28 12.7	+486.2	14 52.45	54 29.69
	Moon II. <b>U.</b>	15.5	22 8 51.07	120.27	62.06	8 48 1.0	+514.8	14 50.23	54 21.56
	170 B. Aquarii	6.0	22 19 30			7 35			
	67 Aquarii	6.4	22 39 13			7 22			
9	Moon II. <b>L.</b>	-	22 32 44.21	118.64	61.64	S. 7 2 42.7	+537.3	14 48.37	54 14.76
	Moon II. <b>U.</b>	16.5	22 56 19.66	117.33	61.31	5 13 28.6	+554.1	14 46.92	54 9.43
	293 B. Aquarii	5.5	23 11 36			3 55			
	13 Piscium	6.4	23 28 0			1 31			
10	Moon II. <b>L.</b>	-	23 19 41.42	116.36	61.07	S. 3 21 26.7	+565.3	14 45.90	54 5.72
	Moon II. <b>U.</b>	17.6	23 42 53.89	115.78	60.95	1 27 42.5	+571.2	14 45.36	54 3.75
	80 B. Piscium	6.3	0 1 7			S. 0 56			
	98 B. Piscium	6.3	0 13 50			N. 1 16			
11	Moon II. <b>L.</b>	-	0 6 1.72	115.59	60.92	N. 0 26 41.4	+571.9	14 45.35	54 3.69
	Moon II. <b>U.</b>	18.6	0 29 9.79	115.82	61.01	2 20 43.7	+567.6	14 45.90	54 5.69
	147 B. Piscium	5.9	0 44 20			4 53			
	73 Piscium	6.2	1 0 53			5 15			
12	Moon II. <b>L.</b>	-	0 52 23.10	116.47	61.22	N. 4 13 24.9	+558.4	14 47.04	54 9.88
	Moon II. <b>U.</b>	19.6	1 15 46.77	117.55	61.54	6 3 44.6	+544.1	14 48.81	54 16.38
	μ Piscium	5.0	1 26 8			5 45			
	ο Piscium	4.5	1 41 19			8 46			
13	Moon II. <b>L.</b>	-	1 39 25.90	119.05	61.96	N. 7 50 42.2	+524.6	14 51.25	54 25.30
	Moon II. <b>U.</b>	20.7	2 3 25.58	120.97	62.50	9 33 14.6	+499.9	14 54.36	54 36.71
	ξ Arietis	5.5	2 20 40			10 16			
	85 Ceti	6.3	2 38 19			10 25			
14	Moon II. <b>L.</b>	-	2 27 50.66	123.28	63.13	N. 11 10 16.0	+469.4	14 58.16	54 50.65
	Moon II. <b>U.</b>	21.7	2 52 45.75	125.96	63.84	12 40 36.4	+433.0	15 2.66	55 7.15
	147 B. Arietis	5.8	3 2 9			12 53			
	30 B. Tauri	6.4	3 33 27			15 11			
15	Moon II. <b>L.</b>	-	3 18 14.92	128.96	64.63	N. 14 3 1.4	+390.1	15 7.86	55 26.14
	Moon II. <b>U.</b>	22.7	3 44 21.67	132.21	65.46	15 16 11.9	+340.5	15 13.68	55 47.49
	180 B. Tauri	6.1	4 3 33			17 8			
	δ Tauri	3.9	4 18 28			17 22			
16	Moon II. <b>L.</b>	-	4 11 8.51	135.62	66.32	N. 16 18 45.0	+283.8	15 20.12	56 11.12
	Moon II. <b>U.</b>	23.8	4 38 36.82	139.10	67.19	17 9 14.6	+219.9	15 27.12	56 36.75
	m Tauri	5.0	5 2 52			18 32			
	111 Tauri	5.1	5 19 54			N. 17 19			

## 450 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
Aug. 17	Moon II. L.	-	h m s 5 6 46.62	s 142.51	s 68.02	N. 17 46 14.7	+148.9	15 34.56	57 4.01
	Moon II. U.	24.8	5 35 36.34	145.73	68.78	18 8 21.9	+71.2	15 42.36	57 32.54
18	Moon II. L.	-	6 5 2.79	148.61	69.46	N. 18 14 21.1	-12.3	15 50.33	58 1.79
	Moon II. U.	25.8	6 35 1.18	151.03	70.02	18 3 10.0	-100.2	15 58.35	58 31.19
19	Moon II. L.	-	7 5 25.34	152.90	70.44	N. 17 34 5.6	-190.8	16 6.23	59 0.04
	Moon II. U.	26.9	7 36 8.25	154.15	70.71	16 46 49.6	-281.8	16 13.76	59 27.62
20	Moon II. L.	-	8 7 2.43	154.78	70.84	N. 15 41 32.4	-370.5	16 20.72	59 53.14
	Moon II. U.	27.9	8 38 0.61	154.83	70.83	14 18 56.7	-454.4	16 26.92	60 15.84
21	Moon II. L.	-	9 8 56.30	154.38	70.71	N. 12 40 17.3	-530.7	16 32.15	60 34.99
	Moon II. U.	29.0	9 39 44.22	153.55	70.50	10 47 19.4	-597.1	16 36.24	60 50.01
22	Moon I. L.	-	10 8 0.07	152.52	70.24	N. 8 42 14.8	-651.5	16 39.07	61 0.37
23	Moon I. U.	0.7	10 38 23.13	151.32	69.96	N. 6 27 36.2	-692.6	16 40.55	61 5.79
	Moon I. L.	-	11 8 31.55	150.10	69.67	4 6 10.1	-719.3	16 40.65	61 6.13
24	Moon I. U.	1.7	11 38 25.72	148.95	69.42	N. 1 40 50.4	-731.5	16 39.39	61 1.52
	Moon I. L.	-	12 8 7.00	147.96	69.20	S. 0 45 28.4	-729.3	16 36.85	60 52.24
25	Moon I. U.	2.7	12 37 37.33	147.13	69.02	S. 3 9 56.9	-713.3	16 33.15	60 38.69
	Moon I. L.	-	13 6 58.89	146.49	68.90	5 29 56.1	-684.5	16 28.45	60 21.48
26	Moon I. U.	3.8	13 36 13.82	146.02	68.81	S. 7 42 59.8	-644.3	16 22.93	60 1.26
	Moon I. L.	-	14 5 23.90	145.68	68.76	9 46 58.4	-593.9	16 16.79	59 38.70
27	Moon I. U.	4.8	14 34 30.29	145.40	68.71	S. 11 39 59.9	-535.0	16 10.19	59 14.52
	Moon I. L.	-	15 3 33.45	145.12	68.67	13 20 30.3	-469.0	16 3.30	58 49.31
	13 Libræ	5.7	14 50 10			11 35			
	0 Libræ	6.2	15 16 42			15 16			
28	Moon I. U.	5.9	15 32 32.94	144.77	68.59	S. 14 47 14.4	-397.6	15 56.31	58 23.72
	Moon I. L.	-	16 1 27.47	144.28	68.48	15 59 15.7	-322.1	15 49.36	57 58.23
	49 Libræ	5.4	15 55 59			16 18			
	χ Ophiuchi	4.9	16 22 32			18 17			
29	Moon I. U.	6.9	16 30 14.98	143.59	68.31	S. 16 55 55.3	-244.2	15 42.56	57 33.29
	Moon I. L.	-	16 58 52.75	142.65	68.07	17 36 52.2	-165.2	15 35.99	57 9.22
	78 B. Ophiuchi	6.5	16 51 34			16 41			
	125 B. Ophiuchi	6.2	17 3 46			17 30			
30	Moon I. U.	7.9	17 27 17.60	141.44	67.75	S. 18 2 1.9	-86.6	15 29.74	56 46.34
	Moon I. L.	-	17 55 26.19	139.95	67.35	18 11 35.3	-9.4	15 23.86	56 24.77
	305 B. Ophiuchi	6.3	17 51 23			18 47			
	32 G. Sagittarii	5.7	18 3 20			17 10			
31	Moon I. U.	9.0	18 23 15.24	138.19	66.89	S. 18 5 56.9	+65.2	15 18.38	56 4.71
	Moon I. L.	-	18 50 41.80	136.21	66.36	17 45 43.7	+136.3	15 13.32	55 46.15
	155 B. Sagittarii	5.5	18 51 4			16 28			
	187 B. Sagittarii	6.4	19 2 38			S. 18 51			



# MOON-CULMINATING STARS, 1922. 451

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of Q's R.A. in 1 hour of Long.	Sid. Time of Semi- pass <sup>s</sup> Merid.	Apparent Declination.	Var. of Q's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Sept. 1	Moon I. U.	10.0	19 17 43.48	134.05	65.78	S. 17 11 42.7	+203.1	15 8.70	55 29.21
	Moon I. L.	-	19 44 18.56	131.78	65.16	16 24 49.4	+264.9	15 4.49	55 13.83
	54 Sagittarii	5.4	19 36 19			16 28			
	9 Sagittarii	5.1	19 53 35			15 42			
2	Moon I. U.	11.0	20 10 26.09	129.47	64.54	S. 15 26 5.4	+321.5	15 0.71	54 59.98
	Moon I. L.	-	20 36 5.96	127.18	63.91	14 16 37.1	+372.3	14 57.34	54 47.63
	45 B. Capricorni	6.1	20 29 55			13 59			
	84 B. Capricorni	6.0	20 46 27			12 50			
3	Moon I. U.	12.1	21 1 18.81	124.98	63.31	S. 12 57 33.5	+417.3	14 54.37	54 36.73
	Moon I. L.	-	21 26 6.02	122.92	62.74	11 30 5.0	+456.4	14 51.77	54 27.24
	18 Aquarii	5.5	21 19 59			13 12			
	137 B. Capricorni	6.2	21 35 20			10 55			
4	Moon I. U.	13.1	21 50 29.63	121.05	62.23	S. 9 55 23.0	+489.6	14 49.56	54 19.11
	Moon I. L.	-	22 14 32.21	119.42	61.78	8 14 38.3	+516.9	14 47.70	54 12.31
	θ Aquarii	4.3	22 12 47			8 10			
	186 B. Aquarii	6.1	22 27 16			6 57			
5	Moon I. U.	14.1	22 38 16.81	118.06	61.41	S. 6 29 0.7	+538.4	14 46.21	54 6.84
	197 G. Aquarii	6.3	22 53 18			5 13			
	293 B. Aquarii	5.5	23 11 37			3 55			
6	Moon II. L.	-	23 3 49.06	116.96	61.13	S. 4 39 39.0	+554.3	14 45.08	54 2.71
	Moon II. U.	15.2	23 27 7.83	116.23	60.93	S. 2 47 40.6	+564.5	14 44.32	53 59.93
	21 Piscium	5.6	23 45 31			N. 0 39			
	80 B. Piscium	6.3	0 1 7			S. 0 56			
7	Moon II. L.	-	23 50 19.84	115.83	60.83	S. 0 54 11.7	+569.4	14 43.94	53 58.53
	Moon II. U.	16.2	0 13 29.23	115.79	60.84	N. 0 59 43.0	+568.9	14 43.96	53 58.61
	44 Piscium	6.0	0 21 28			1 31			
	147 B. Piscium	5.9	0 44 21			4 53			
8	Moon II. L.	-	0 36 40.18	116.10	60.94	N. 2 52 59.5	+563.0	14 44.40	54 0.21
	Moon II. U.	17.2	0 59 57.01	116.76	61.15	4 44 34.3	+551.9	14 45.28	54 3.45
	88 Piscium	6.2	1 10 42			6 35			
	μ Piscium	5.0	1 26 9			5 45			
9	Moon II. L.	-	1 23 23.94	117.78	61.45	N. 6 33 23.6	+535.4	14 46.64	54 8.43
	Moon II. U.	18.3	1 47 5.22	119.15	61.84	8 18 23.7	+513.7	14 48.50	54 15.23
	ξ <sup>1</sup> Ceti	4.5	2 8 55			8 29			
	ξ Arietis	5.5	2 20 41			10 16			
10	Moon II. L.	-	2 11 4.94	120.86	62.33	N. 9 58 29.7	+486.4	14 50.89	54 23.99
	Moon II. U.	19.3	2 35 27.00	122.87	62.90	11 32 35.4	+453.6	14 53.83	54 34.76
	147 B. Arietis	5.8	3 2 10			12 53			
	B.D.+13°535	7.4	3 13 37			13 34			
11	Moon II. L.	-	3 0 14.97	125.17	63.53	N. 12 59 32.7	+415.0	14 57.36	54 47.69
	Moon II. U.	20.3	3 25 32.00	127.71	64.22	14 18 11.7	+370.5	15 1.48	55 2.79
	33 B. Tauri	6.3	3 35 4			16 17			
	162 B. Tauri	6.3	3 56 12			N. 17 5			

# 452 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Sept. 12	Moon II. L.	-	3 51 20.71	130.44	64.95	N. 15 27 20.4	+320.0	15 6.21	55 20.12
	Moon II. U.	21.3	4 17 42.99	133.29	65.70	16 25 46.2	+263.3	15 11.56	55 39.70
	89 Tauri	5.8	4 33 44			15 53			
	318 B. Tauri	5.7	4 52 55			17 2			
13	Moon II. L.	-	4 44 39.85	136.19	66.45	N. 17 12 15.3	+200.6	15 17.48	56 1.44
	Moon II. U.	22.4	5 12 11.32	139.04	67.18	17 45 36.1	+131.9	15 23.98	56 25.22
	122 Tauri	5.5	5 32 35			17 0			
	57 Orionis	5.8	5 50 22			19 44			
14	Moon II. L.	-	5 40 16.36	141.77	67.86	N. 18 4 40.1	+57.9	15 30.98	56 50.89
	Moon II. U.	23.4	6 8 52.87	144.27	68.48	18 8 25.8	-21.0	15 38.43	57 18.17
	B.D. +17°1275	6.2	6 26 41			17 0			
	74 B. Geminor.	6.2	6 42 52			18 17			
15	Moon II. L.	-	6 37 57.67	146.47	69.00	N. 17 56 1.5	-103.6	15 46.22	57 46.71
	Moon II. U.	24.5	7 7 26.73	148.31	69.43	17 26 50.3	-188.6	15 54.21	58 16.01
16	Moon II. L.	-	7 37 15.48	149.75	69.76	N. 16 40 32.4	-274.4	16 2.28	58 45.55
	Moon II. U.	25.5	8 7 19.00	150.77	69.98	15 37 10.0	-359.0	16 10.23	59 14.68
17	Moon II. L.	-	8 37 32.54	151.42	70.11	N. 14 17 10.1	-440.3	16 17.86	59 42.64
	Moon II. U.	26.5	9 7 51.75	151.73	70.15	12 41 26.2	-515.9	16 24.96	60 8.69
18	Moon II. L.	-	9 38 13.06	151.78	70.13	N. 10 51 19.0	-583.8	16 31.31	60 31.94
	Moon II. U.	27.6	10 8 33.80	151.65	70.07	8 48 35.8	-641.6	16 36.69	60 51.64
19	Moon II. L.	-	10 38 52.34	151.43	70.00	N. 6 35 28.4	-687.5	16 40.90	61 7.09
	Moon II. U.	28.6	11 9 7.92	151.17	69.92	4 14 29.3	-720.0	16 43.80	61 17.70
20	Moon II. L.	-	11 39 20.65	150.96	69.86	N. 1 48 26.4	-737.9	16 45.26	61 23.02
21	Moon I. U.	0.3	12 7 11.48	150.81	69.83	S. 0 39 41.3	-740.8	16 45.21	61 22.86
	Moon I. L.	-	12 37 20.67	150.73	69.82	3 6 52.6	-728.6	16 43.67	61 17.21
22	Moon I. U.	1.4	13 7 29.32	150.72	69.83	S. 5 30 8.3	-701.7	16 40.70	61 6.35
	Moon I. L.	-	13 37 37.98	150.73	69.85	7 46 38.5	-661.2	16 36.42	60 50.66
23	Moon I. U.	2.4	14 7 46.60	150.70	69.87	S. 9 53 48.6	-608.6	16 30.99	60 30.78
	Moon I. L.	-	14 37 54.33	150.57	69.87	11 49 23.1	-545.6	16 24.61	60 7.42
24	Moon I. U.	3.4	15 7 59.44	150.25	69.83	S. 13 31 29.1	-474.2	16 17.52	59 41.39
	Moon I. L.	-	15 37 59.33	149.68	69.72	14 58 39.3	-396.6	16 9.89	59 13.46
25	Moon I. U.	4.4	16 7 50.61	148.81	69.54	S. 16 9 51.3	-314.9	16 1.98	58 44.46
	Moon I. L.	-	16 37 29.30	147.58	69.26	17 4 28.7	-231.2	15 53.95	58 15.05
26	Moon I. U.	5.5	17 6 51.17	146.00	68.89	S. 17 42 18.7	-147.3	15 46.01	57 45.95
	Moon I. L.	-	17 35 51.97	144.08	68.43	18 3 29.6	-64.9	15 38.29	57 17.65
	192 B. Ophiuchi	6.3	17 20 5			18 22			
	305 B. Ophiuchi	6.3	17 51 22			18 47			
27	Moon I. U.	6.5	18 4 27.79	141.85	67.88	S. 18 8 28.2	+14.6	15 30.91	56 50.62
	Moon I. L.	-	18 32 35.38	139.38	67.26	17 57 56.1	+90.1	15 23.98	56 25.22
	100 B. Sagittarii	5.0	18 26 55			18 27			
	155 B. Sagittarii	5.5	18 51 4			18 28			

# MOON-CULMINATING STARS, 1922. 453

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of Q's R.A. in 1 hour of Long.	Sid. Time of Semi- pass. Merid.	Apparent Declination.	Var. of Q's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Sept. 28	Moon I. <b>U.</b>	7.6	19 0 12.26	136.75	66.59	S. 17 32 46.1	+160.7	15 17.54	56 1.64
	Moon I. <b>L.</b>	-	19 27 16.93	134.03	65.89	16 53 59.7	+226.0	15 11.68	55 40.14
	45 Sagittarii	6.0	19 17 21			18 27			
	54 Sagittarii	5.4	19 36 18			16 28			
29	Moon I. <b>U.</b>	8.6	19 53 48.84	131.30	65.17	S. 16 2 43.0	+285.7	15 6.39	55 20.77
	Moon I. <b>L.</b>	-	20 19 48.40	128.65	64.46	15 0 5.3	+339.6	15 1.70	55 3.58
	16 B. Capricorni	6.2	20 16 27			15 2			
	45 B. Capricorni	6.1	20 29 54			13 59			
30	Moon I. <b>U.</b>	9.7	20 45 16.94	126.14	63.77	S. 13 47 16.8	+387.5	14 57.61	54 48.59
	Moon I. <b>L.</b>	-	21 10 16.43	123.82	63.14	12 25 27.9	+429.7	14 54.10	54 35.73
	ν Aquarii	4.5	21 5 24			11 41			
	18 Aquarii	5.5	21 19 59			13 12			
Oct. 1	Moon I. <b>U.</b>	10.7	21 34 49.56	121.75	62.56	S. 10 55 47.7	+466.1	14 51.16	54 24.95
	Moon I. <b>L.</b>	-	21 58 59.44	119.95	62.05	9 19 24.0	+496.9	14 48.76	54 16.18
	96 B. Aquarii	6.5	21 49 29			10 40			
	θ Aquarii	4.3	22 12 46			8 10			
2	Moon I. <b>U.</b>	11.7	22 22 49.60	118.46	61.62	S. 7 37 23.5	+522.3	14 46.88	54 9.29
	Moon I. <b>L.</b>	-	22 46 23.82	117.30	61.28	5 50 51.6	+542.2	14 45.48	54 4.18
	67 Aquarii	6.4	22 39 13			7 22			
	197 G. Aquarii	6.3	22 53 18			5 13			
3	Moon I. <b>U.</b>	12.7	23 9 46.09	116.47	61.03	S. 4 0 52.9	+556.7	14 44.54	54 0.75
	Moon I. <b>L.</b>	-	23 33 0.49	115.99	60.88	2 8 31.5	+566.0	14 44.05	53 58.91
	13 Piscium	6.4	23 28 1			S. 1 31			
	21 Piscium	5.6	23 45 31			N. 0 39			
4	Moon I. <b>U.</b>	13.8	23 56 11.16	115.85	60.83	S. 0 14 51.5	+569.8	14 43.95	53 58.55
	Moon I. <b>L.</b>	-	0 19 22.24	116.06	60.88	N. 1 39 3.1	+568.4	14 44.24	53 59.62
	98 B. Piscium	6.3	0 13 51			1 16			
	44 Piscium	6.0	0 21 28			1 31			
5	Moon I. <b>U.</b>	14.8	0 42 37.83	116.60	61.02	N. 3 32 7.2	+561.4	14 44.89	54 2.05
	73 Piscium	6.2	1 0 54			5 15			
	88 Piscium	6.2	1 10 42			6 35			
6	Moon II. <b>L.</b>	-	1 8 4.44	117.52	61.26	N. 5 23 14.9	+548.9	14 45.93	54 5.82
	Moon II. <b>U.</b>	15.8	1 31 41.53	118.71	61.59	7 11 19.1	+530.8	14 47.32	54 10.92
	54 Ceti	6.0	1 46 47			10 40			
	ξ <sup>1</sup> Ceti	4.5	2 8 55			8 29			
7	Moon II. <b>L.</b>	-	1 55 34.73	120.20	62.00	N. 8 55 11.9	+507.0	14 49.07	54 17.33
	Moon II. <b>U.</b>	16.9	2 19 47.34	121.94	62.49	10 33 43.6	+477.3	14 51.19	54 25.06
	38 Arietis	5.2	2 40 46			12 7			
	147 B. Arietis	5.8	3 2 10			12 53			
8	Moon II. <b>L.</b>	-	2 44 22.29	123.92	63.03	N. 12 5 43.8	+441.7	14 53.68	54 34.21
	Moon II. <b>U.</b>	17.9	3 9 22.03	126.07	63.63	13 30 1.1	+400.2	14 56.57	54 44.80
	30 B. Tauri	6.4	3 33 29			15 11			
	148 B. Tauri	5.9	3 48 46			N. 17 6			

## 454 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Oct. 9	Moon II. L.	-	3 34 48.45	128.35	64.25	N. 14 45 24.4	+352.7	14 59.86	54 56.87
	Moon II. U.	18.9	4 0 42.78	130.71	64.89	15 50 43.1	+299.4	15 3.58	55 10.49
	63 Tauri	5.7	4 19 0			16 36			
	89 Tauri	5.8	4 33 45			15 53			
10	Moon II. L.	-	4 27 5.52	133.08	65.53	N. 16 44 48.4	+240.5	15 7.74	55 25.72
	Moon II. U.	20.0	4 53 56.35	135.38	66.15	17 26 34.5	+176.3	15 12.35	55 42.61
	111 Tauri	5.1	5 19 56			17 19			
	122 Tauri	5.5	5 32 35			17 0			
11	Moon II. L.	-	5 21 14.15	137.56	66.74	N. 17 55 0.9	+107.3	15 17.40	56 1.13
	Moon II. U.	21.0	5 48 57.02	139.55	67.26	18 9 13.6	+34.2	15 22.90	56 21.28
	124 H <sup>1</sup> . Orionis	5.7	6 9 58			17 56			
	B.D. + 17° 1275	6.2	6 26 42			17 0			
12	Moon II. L.	-	6 17 2.42	141.30	67.72	N. 18 8 27.7	-42.3	15 28.83	56 43.01
	Moon II. U.	22.0	6 45 27.25	142.79	68.11	17 52 8.9	-121.1	15 35.16	57 6.19
	51 Geminorum	5.3	7 8 56			16 17			
	162 B. Geminor.	5.7	7 27 21			17 15			
13	Moon II. L.	-	7 14 8.15	143.98	68.41	N. 17 19 56.5	-201.1	15 41.82	57 30.61
	Moon II. U.	23.1	7 43 1.72	144.90	68.64	16 31 44.2	-280.9	15 48.76	57 56.01
	30 B. Canceri	6.1	8 6 38			14 51			
	29 Canceri	5.9	8 24 18			14 28			
14	Moon II. L.	-	8 12 4.81	145.57	68.79	N. 15 27 42.6	-359.0	15 55.86	58 22.04
	Moon II. U.	24.1	8 41 14.73	146.05	68.90	14 8 20.6	-434.0	16 3.01	58 48.24
15	Moon II. L.	-	9 10 29.47	146.39	68.96	N. 12 34 25.7	-504.2	16 10.07	59 14.11
	Moon II. U.	25.2	9 39 47.83	146.67	69.00	10 47 4.8	-568.0	16 16.87	59 39.00
16	Moon II. L.	-	10 9 9.47	146.95	69.04	N. 8 47 45.5	-623.7	16 23.20	60 2.24
	Moon II. U.	26.2	10 38 34.80	147.29	69.09	6 38 14.6	-669.7	16 28.91	60 23.16
17	Moon II. L.	-	11 8 4.97	147.76	69.17	N. 4 20 38.0	-704.4	16 33.78	60 41.00
	Moon II. U.	27.2	11 37 41.57	148.37	69.29	N. 1 57 19.0	-726.5	16 37.63	60 55.09
18	Moon II. L.	-	12 7 26.45	149.14	69.46	S. 0 29 4.2	-735.0	16 40.30	61 4.84
	Moon II. U.	28.3	12 37 21.39	150.04	69.66	2 55 42.4	-728.9	16 41.64	61 9.78
19	Moon II. L.	-	13 7 27.71	151.03	69.88	S. 5 19 39.8	-708.1	16 41.60	61 9.65
	Moon II. U.	29.3	13 37 46.08	152.03	70.12	7 38 0.1	-672.8	16 40.14	61 4.30
20	Moon I. L.	-	14 5 55.39	152.91	70.34	S. 9 47 53.0	-623.8	16 37.30	60 53.88
21	Moon I. U.	1.0	14 36 34.94	153.64	70.52	S. 11 46 41.1	-562.3	16 33.16	60 38.70
	Moon I. L.	-	15 7 21.44	154.05	70.64	13 32 6.0	-490.3	16 27.85	60 19.26
22	Moon I. U.	2.0	15 38 10.46	154.04	70.66	S. 15 2 14.2	-409.9	16 21.55	59 56.20
	Moon I. L.	-	16 8 56.34	153.51	70.56	16 15 41.6	-323.9	16 14.48	59 30.26
23	Moon I. U.	3.0	16 39 32.56	152.42	70.33	S. 17 11 35.3	-234.8	16 6.85	59 2.28
	Moon I. L.	-	17 9 52.26	150.76	69.96	17 49 33.4	-145.1	15 58.85	58 32.99
24	Moon I. U.	4.1	17 39 48.73	148.56	69.46	S. 18 9 43.2	-57.1	15 50.72	58 3.17
	Moon I. L.	-	18 9 15.94	145.90	68.84	S. 18 12 37.1	+27.3	15 42.62	57 33.50

# MOON-CULMINATING STARS, 1922. 455

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of G's R.A. in 1 hour of Long.	Sid. Time of Semi- pass Merid.	Apparent Declination.	Var. of G's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Oct. 25	Moon I. U.	5.1	18 38 8.99	142.89	68.12	S. 17 59 7.5	+106.6	15 34.74	57 4.64
	Moon I. L.	-	19 6 24.38	139.65	67.34	17 30 21.7	+179.9	15 27.22	56 37.11
	187 B. Sagittarii	6.4	19 2 37			18 51			
	ρ Sagittarii	4.0	19 17 11			17 59			
26	Moon I. U.	6.2	19 34 0.10	136.30	66.50	S. 16 47 36.1	+246.5	15 20.16	56 11.26
	Moon I. L.	-	20 0 55.63	132.97	65.67	15 52 12.2	+306.3	15 13.68	55 47.48
	9 Sagittarii	5.1	19 53 34			15 42			
	16 B. Capricorni	6.2	20 16 26			15 2			
27	Moon I. U.	7.2	20 27 11.87	129.77	64.84	S. 14 45 32.0	+359.3	15 7.81	55 25.96
	Moon I. L.	-	20 52 50.83	126.77	64.06	13 28 56.4	+405.6	15 2.59	55 6.89
	84 B. Capricorni	6.0	20 46 27			12 50			
	ν Aquarii	4.5	21 5 23			11 41			
28	Moon I. U.	8.2	21 17 55.47	124.06	63.34	S. 12 3 43.2	+445.6	14 58.08	54 50.36
	Moon I. L.	-	21 42 29.54	121.68	62.69	10 31 5.8	+479.6	14 54.27	54 36.37
	137 B. Capricorni	6.2	21 35 19			10 55			
	96 B. Aquarii	6.5	21 49 29			10 40			
29	Moon I. U.	9.3	22 6 37.28	119.67	62.13	S. 8 52 14.3	+508.0	14 51.16	54 24.97
	Moon I. L.	-	22 30 23.28	118.06	61.67	7 8 14.4	+531.1	14 48.73	54 16.06
	170 B. Aquarii	6.0	22 19 30			7 35			
	67 Aquarii	6.4	22 39 13			7 22			
30	Moon I. U.	10.3	22 53 52.40	116.87	61.32	S. 5 20 9.5	+548.9	14 46.96	54 9.58
	Moon I. L.	-	23 17 9.54	116.07	61.07	3 29 0.7	+561.7	14 45.82	54 5.41
	293 B. Aquarii	5.5	23 11 36			3 55			
	13 Piscium	6.4	23 28 1			1 31			
31	Moon I. U.	11.3	23 40 19.71	115.69	60.94	S. 1 35 48.0	+569.6	14 45.27	54 3.39
	Moon I. L.	-	0 3 27.82	115.72	60.92	N. 0 18 28.4	+572.3	14 45.27	54 3.41
	60 B. Piscium	6.0	23 50 50			S. 0 19			
	98 B. Piscium	6.3	0 13 51			N. 1 16			
Nov. 1	Moon I. U.	12.3	0 26 38.69	116.15	61.01	N. 2 12 47.3	+570.0	14 45.79	54 5.30
	Moon I. L.	-	0 49 56.96	116.96	61.20	4 6 6.4	+562.3	14 46.78	54 8.91
	147 B. Piscium	5.9	0 44 21			4 53			
	73 Piscium	6.2	1 0 54			5 15			
2	Moon I. U.	13.4	1 13 27.06	118.12	61.49	N. 5 57 20.2	+549.1	14 48.18	54 14.07
	Moon I. L.	-	1 37 13.08	119.61	61.87	7 45 21.1	+530.1	14 49.98	54 20.65
	μ Piscium	5.0	1 26 10			5 45			
	54 Ceti	6.0	1 46 47			10 40			
3	Moon I. U.	14.4	2 1 18.76	121.39	62.34	N. 9 28 58.2	+505.1	14 52.11	54 28.46
	Moon I. L.	-	2 25 47.32	123.41	62.87	11 6 57.9	+473.8	14 54.56	54 37.44
	ξ Arietis	5.5	2 20 42			10 16			
	85 Ceti	6.3	2 38 21			10 25			
4	Moon II. U.	15.4	2 52 48.27	125.73	63.44	N. 12 38 4.4	+436.2	14 57.29	54 47.45
	147 B. Arietis	5.8	3 2 11			12 53			
	30 B. Tauri	6.4	3 33 29			N. 15 11			

# 456 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass <sup>W</sup> Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	"
Nov. 5	Moon II. L.	-	3 18 10.97	128.07	64.06	N. 14 1 0.2	+392.1	15 0.28	54 58.40
	Moon II. U.	16.5	3 44 2.15	130.46	64.69	15 14 28.3	+341.6	15 3.50	55 10.20
	180 B. Tauri	6.1	4 3 36			17 8			
	63 Tauri	5.7	4 19 2			16 36			
6	Moon II. L.	-	4 10 21.89	132.82	65.32	N. 16 17 12.9	+284.9	15 6.95	55 22.82
	Moon II. U.	17.5	4 37 9.27	135.05	65.91	17 8 2.0	+222.4	15 10.61	55 36.23
	m Tauri	5.0	5 2 54			18 32			
	111 Tauri	5.1	5 19 56			17 19			
7	Moon II. L.	-	5 4 22.38	137.09	66.45	N. 17 45 49.9	+154.8	15 14.48	55 50.39
	Moon II. U.	18.5	5 31 58.39	138.86	66.93	18 9 39.6	+82.8	15 18.54	56 5.31
	57 Orionis	5.8	5 50 23			19 44			
	19 B. Geminor.	6.2	6 9 2			18 42			
8	Moon II. L.	-	5 59 53.70	140.30	67.33	N. 18 18 44.8	+7.6	15 22.82	56 21.01
	Moon II. U.	19.6	6 28 4.19	141.39	67.64	18 12 32.5	-69.9	15 27.31	56 37.44
	74 B. Geminor.	6.2	6 42 54			18 17			
	41 H <sup>1</sup> .Geminor.	6.0	6 58 7			16 47			
9	Moon II. L.	-	6 56 25.55	142.11	67.85	N. 17 50 44.0	-148.2	15 32.01	56 54.64
	Moon II. U.	20.6	7 24 53.56	142.50	67.98	17 13 16.6	-226.2	15 36.89	57 12.53
	1 Cancri	6.0	7 52 37			16 0			
	30 B. Cancri	6.1	8 6 39			14 51			
10	Moon II. L.	-	7 53 24.46	142.61	68.04	N. 16 20 23.3	-302.3	15 41.94	57 31.05
	Moon II. U.	21.6	8 21 55.27	142.50	68.03	15 12 33.0	-375.5	15 47.15	57 50.11
	A <sup>2</sup> Cancri	5.7	8 42 43			12 24			
	α Cancri	4.3	8 54 16			12 9			
11	Moon II. L.	-	8 50 23.93	142.26	67.98	N. 13 50 29.5	-444.3	15 52.45	58 9.54
	Moon II. U.	22.7	9 18 49.47	142.00	67.92	12 15 11.1	-507.8	15 57.80	58 29.13
	18 Leonis	5.8	9 42 14			12 10			
	π Leonis	4.9	9 56 8			8 25			
12	Moon II. L.	-	9 47 12.08	141.79	67.87	N. 10 27 49.6	-564.7	16 3.10	58 48.57
	Moon II. U.	23.7	10 15 32.98	141.73	67.84	8 29 49.7	-614.0	16 8.29	59 7.58
	48 Leonis	5.2	10 30 46			7 21			
	56 Leonis	6.1	10 52 1			6 36			
13	Moon II. L.	-	10 43 54.36	141.89	67.86	N. 6 22 48.8	-654.7	16 13.24	59 25.69
	Moon II. U.	24.8	11 12 19.18	142.31	67.95	4 8 36.0	-685.8	16 17.81	59 42.46
14	Moon II. L.	-	11 40 50.93	143.04	68.10	N. 1 49 12.9	-706.2	16 21.88	59 57.39
	Moon II. U.	25.8	12 9 33.30	144.08	68.32	S. 0 33 7.7	-715.2	16 25.32	60 9.99
15	Moon II. L.	-	12 38 29.95	145.41	68.62	S. 2 56 2.5	-711.8	16 27.98	60 19.74
	Moon II. U.	26.8	13 7 44.08	146.98	68.97	5 16 59.3	-695.4	16 29.73	60 26.14
16	Moon II. L.	-	13 37 18.10	148.71	69.36	S. 7 33 20.1	-665.8	16 30.47	60 28.84
	Moon II. U.	27.9	14 7 13.21	150.48	69.77	S. 9 42 24.9	-622.8	16 30.11	60 27.55

# MOON-CULMINATING STARS, 1922. 457

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Nov. 17	Moon II. L.	-	14 37 29.09	152.14	70.15	S. 11 41 37.4	-567.2	16 28.63	60 22.10
	Moon II. U.	28.9	15 8 3.61	153.55	70.48	13 28 31.2	-499.9	16 26.02	60 12.55
18	Moon II. L.	-	15 38 52.69	154.54	70.72	S. 15 0 56.4	-422.8	16 22.32	59 59.01
19	Moon I. U.	0.5	16 7 28.74	154.96	70.83	S. 16 17 6.7	-337.9	16 17.63	59 41.77
	Moon I. L.	-	16 38 27.61	154.73	70.78	17 15 44.5	-247.8	16 12.06	59 21.39
20	Moon I. U.	1.6	17 9 19.36	153.76	70.56	S. 17 56 5.2	-155.5	16 5.77	58 58.34
	Moon I. L.	-	17 39 55.03	152.06	70.18	18 17 57.0	-63.5	15 58.94	58 33.32
21	Moon I. U.	2.6	18 10 6.11	149.68	69.63	S. 18 21 40.4	+25.6	15 51.74	58 6.91
	Moon I. L.	-	18 39 45.08	146.74	68.95	18 8 2.6	+109.7	15 44.35	57 39.84
22	Moon I. U.	3.6	19 8 46.09	143.37	68.15	S. 17 38 12.5	+187.4	15 36.96	57 12.76
	Moon I. L.	-	19 37 5.04	139.76	67.29	16 53 34.3	+257.7	15 29.70	56 46.20
23	Moon I. U.	4.7	20 4 39.96	136.06	66.40	S. 15 55 39.9	+320.1	15 22.76	56 20.77
	Moon I. L.	-	20 31 30.70	132.42	65.49	14 46 4.5	+374.5	15 16.23	55 56.86
	$\beta$ Capricorni	3.2	20 16 40			15 1			
	$\tau$ Capricorni	5.2	20 34 57			15 13			
24	Moon I. U.	5.7	20 57 38.71	128.96	64.63	S. 13 26 21.7	+421.3	15 10.24	55 34.86
	Moon I. L.	-	21 23 6.86	125.79	63.82	11 58 1.2	+460.9	15 4.83	55 15.05
	18 Aquarii	5.5	21 19 58			13 13			
	137 B. Capricorni	6.2	21 35 19			10 55			
25	Moon I. U.	6.7	21 47 59.01	122.97	63.09	S. 10 22 26.4	+493.8	15 0.10	54 57.73
	Moon I. L.	-	22 12 19.81	120.57	62.46	8 40 54.7	+520.8	14 56.07	54 42.97
	$\theta$ Aquarii	4.3	22 12 46			8 10			
	186 B. Aquarii	6.1	22 27 16			6 57			
26	Moon I. U.	7.8	22 36 14.42	118.61	61.93	S. 6 54 37.1	+541.5	14 52.78	54 30.91
	Moon I. L.	-	22 59 48.39	117.13	61.52	5 4 39.3	+557.1	14 50.24	54 21.61
	197 G. Aquarii	6.3	22 53 18			5 13			
	293 B. Aquarii	5.5	23 11 36			3 55			
27	Moon I. U.	8.8	23 23 7.41	116.12	61.24	S. 3 12 2.7	+568.0	14 48.45	54 15.05
	Moon I. L.	-	23 46 17.22	115.60	61.08	S. 1 17 45.9	+574.0	14 47.40	54 11.21
	21 Piscium	5.6	23 45 31			N. 0 39			
	60 B. Piscium	6.0	23 50 50			S. 0 19			
28	Moon I. U.	9.8	0 9 23.63	115.55	61.04	N. 0 37 13.9	+575.2	14 47.08	54 10.02
	Moon I. L.	-	0 32 32.27	115.97	61.13	2 31 59.8	+571.6	14 47.43	54 11.32
	44 Piscium	6.0	0 21 28			1 31			
	147 B. Piscium	5.9	0 44 21			4 53			
29	Moon I. U.	10.9	0 55 48.66	116.84	61.34	N. 4 25 33.2	+563.1	14 48.44	54 15.00
	Moon I. L.	-	1 19 18.09	118.14	61.66	6 16 53.1	+549.3	14 50.04	54 20.87
	$\zeta$ Piscium	5.6	1 9 43			7 10			
	263 B. Piscium	6.4	1 24 21			N. 7 34			

# 458 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of C's R.A. in 1 hour of Long.	Sid. Time of Semid. pass Merid.	Apparent Declination.	Var. of C's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	"	' "	' "
Nov. 30	Moon I. U.	11.9	1 43 5.48	119.83	62.08	N. 8 4 55.1	+530.0	14 52.20	54 28.76
	Moon I. L.	-	2 7 15.38	121.88	62.59	9 48 30.1	+504.8	14 54.83	54 38.44
	♄ Ceti	4.5	2 8 56			8 29			
	♄ Arietis	5.5	2 20 42			10 16			
Dec. 1	Moon I. U.	12.9	2 31 51.71	124.22	63.18	N. 11 26 24.8	+473.3	14 57.91	54 49.70
	Moon I. L.	-	2 56 57.69	126.81	63.84	12 57 21.6	+435.1	15 1.33	55 2.24
	38 Arietis	5.2	2 40 47			12 7			
	147 B. Arietis	5.8	3 2 11			12 53			
2	Moon I. U.	13.9	3 22 35.65	129.54	64.52	N. 14 19 59.2	+390.0	15 5.06	55 15.89
	Moon I. L.	-	3 48 46.83	132.33	65.22	15 32 54.2	+338.0	15 9.01	55 30.38
	33 B. Tauri	6.3	3 35 5			16 17			
	162 B. Tauri	6.3	3 56 14			17 5			
3	Moon I. U.	15.0	4 15 31.24	135.06	65.90	N. 16 34 43.4	+279.1	15 13.13	55 45.44
	Moon II. L.	-	4 45 0.62	137.72	66.54	17 24 6.9	+213.8	15 17.33	56 0.90
	89 Tauri	5.8	4 33 46			15 53			
	318 B. Tauri	5.7	4 52 56			17.2			
4	Moon II. U.	16.0	5 12 47.21	139.99	67.12	N. 17 59 51.3	+142.7	15 21.60	56 16.50
	122 Tauri	5.5	5 32 37			16 59			
	B.D.+19°1110	6.0	5 47 51			19 51			
	Moon II. L.	-	5 40 58.74	141.86	67.59	N. 18 20 53.4	+66.9	15 25.85	56 32.08
5	Moon II. U.	17.1	6 9 30.06	143.27	67.96	18 26 24.5	-12.2	15 30.05	56 47.48
	B.D.+17°1275	6.2	6 26 43			17 0			
	74 B. Geminor.	6.2	6 42 54			18 17			
	Moon II. L.	-	6 38 15.27	144.17	68.21	N. 18 15 53.0	-93.2	15 34.18	57 2.60
6	Moon II. U.	18.1	7 7 8.22	144.56	68.34	17 49 6.5	-174.4	15 38.20	57 17.33
	68 Geminorum	5.2	7 29 14			16 0			
	1 Cancri	6.0	7 52 38			16 0			
	Moon II. L.	-	7 36 2.94	144.48	68.35	N. 17 6 13.1	-254.1	15 42.10	57 31.59
7	Moon II. U.	19.1	8 4 54.15	143.99	68.27	16 7 41.5	-330.5	15 45.86	57 45.36
	29 Cancri	5.9	8 24 20			14 28			
	41 Cancri	5.5	8 38 58			12 57			
	Moon II. L.	-	8 33 37.64	143.21	68.11	N. 14 54 18.9	-402.3	15 49.47	57 58.61
8	Moon II. U.	20.2	9 2 10.57	142.25	67.91	13 27 9.0	-468.2	15 52.93	58 11.33
	♄ Leonis	5.1	9 27 48			11 38			
	18 Leonis	5.8	9 42 15			12 10			
	Moon II. L.	-	9 30 31.55	141.24	67.68	N. 11 47 29.5	-527.1	15 56.25	58 23.49
9	Moon II. U.	21.2	9 58 40.70	140.30	67.47	9 56 49.4	-578.2	15 59.42	58 35.07
	43 Leonis	6.3	10 18 59			6 56			
	35 Sextantis	6.1	10 39 21			5 9			
	Moon II. L.	-	10 26 39.51	139.54	67.30	N. 7 56 46.3	-620.8	16 2.41	58 46.02
10	Moon II. U.	22.2	10 54 30.68	139.04	67.18	5 49 5.6	-654.4	16 5.20	58 56.26
	76 Leonis	6.0	11 14 58			2 4			
	89 Leonis	5.7	11 30 25			N. 3 29			



# MOON-CULMINATING STARS, 1922. 459

AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of 's R.A. in hour of Long.	Sid. Time of Semid. pass <sup>g</sup> Merid.	Apparent Declination.	Var. of 's Dec. in hour of Long.	Semi- diameter.	Hor. Par.
			h m s	s	s	° ' "	—	' "	' "
Dec. 11	Moon II. L.	-	11 22 17.84	138.88	67.14	N. 3 35 38.1	-678.5	16 7.77	59 5.66
	Moon II. U.	23.3	11 50 5.29	139.10	67.19	N. 1 18 20.1	-692.8	16 10.07	59 14.11
	13 Virginis	5.9	12 14 43			S. 0 21			
	200 B. Virginis	6.3	12 27 40			4 38			
12	Moon II. L.	-	12 17 57.79	139.72	67.33	S. 1 0 47.2	-696.7	16 12.05	59 21.37
	Moon II. U.	24.3	12 46 0.07	140.73	67.57	3 19 37.5	-689.9	16 13.65	59 27.24
13	Moon II. L.	-	13 14 16.69	142.10	67.88	S. 5 36 0.6	-672.1	16 14.82	59 31.49
	Moon II. U.	25.3	13 42 51.56	143.76	68.26	7 47 42.5	-643.0	16 15.46	59 33.84
14	Moon II. L.	-	14 11 47.60	145.61	68.68	S. 9 52 27.1	-602.6	16 15.52	59 34.06
	Moon II. U.	26.4	14 41 6.44	147.53	69.12	11 47 59.4	-551.0	16 14.94	59 31.91
15	Moon II. L.	-	15 10 47.96	149.36	69.53	S. 13 32 8.9	-488.9	16 13.65	59 27.23
	Moon II. U.	27.4	15 40 50.14	150.94	69.89	15 2 54.5	-417.2	16 11.65	59 19.89
16	Moon II. L.	-	16 11 8.92	152.10	70.15	S. 16 18 30.3	-337.5	16 8.92	59 9.87
	Moon II. U.	28.5	16 41 38.29	152.69	70.28	17 17 30.8	-251.7	16 5.46	58 57.22
17	Moon II. L.	-	17 12 10.64	152.58	70.24	S. 17 58 56.7	-162.2	16 1.34	58 42.11
	Moon II. U.	29.5	17 42 37.25	151.73	70.04	18 22 17.9	-71.4	15 56.60	58 24.74
18	Moon I. L.	-	18 10 29.80	150.20	69.66	S. 18 27 35.0	+ 18.1	15 51.35	58 5.52
19	Moon I. U.	1.0	18 40 19.34	147.95	69.12	S. 18 15 17.4	+104.4	15 45.71	57 44.82
	Moon I. L.	-	19 9 38.24	145.12	68.44	17 46 20.8	+184.4	15 39.76	57 23.05
20	Moon I. U.	2.1	19 38 20.52	141.87	67.67	S. 17 2 0.4	+257.7	15 33.66	57 0.71
	Moon I. L.	-	20 6 22.15	138.37	66.82	16 3 46.1	+323.2	15 27.54	56 38.28
21	Moon I. U.	3.1	20 33 41.10	134.78	65.95	S. 14 53 15.3	+380.5	15 21.53	56 16.26
	Moon I. L.	-	21 0 17.20	131.25	65.08	13 32 7.6	+429.4	15 15.74	55 55.04
22	Moon I. U.	4.1	21 26 11.94	127.91	64.26	S. 12 2 1.5	+470.3	15 10.30	55 35.09
	Moon I. L.	-	21 51 28.21	124.86	63.50	10 24 30.1	+503.7	15 5.30	55 16.76
23	Moon I. U.	5.2	22 16 9.95	122.17	62.81	S. 8 41 0.3	+530.2	15 0.81	55 0.35
	Moon I. L.	-	22 40 21.89	119.90	62.24	6 52 51.6	+550.3	14 56.94	54 46.13
	167 G. Aquarii	6.3	22 34 19			8 18			
	252 B. Aquarii	5.8	22 51 11			5 24			
24	Moon I. U.	6.2	23 4 9.35	118.09	61.78	S. 5 1 16.9	+564.6	14 53.71	54 34.34
	Moon I. L.	-	23 27 37.95	116.76	61.43	3 7 22.7	+573.6	14 51.21	54 25.13
	316 B. Aquarii	6.5	23 16 16			4 20			
	14 Piscium	5.9	23 30 11			1 40			
25	Moon I. U.	7.2	23 50 53.61	115.93	61.22	S. 1 12 10.6	+577.6	14 49.43	54 18.65
	Moon I. L.	-	0 14 2.31	115.60	61.14	N. 0 43 21.2	+576.9	14 48.43	54 14.95
	80 B. Piscium	6.3	0 1 7			S. 0 56			
	44 Piscium	6.0	0 21 27			N. 1 31			
26	Moon I. U.	8.3	0 37 10.08	115.78	61.19	N. 2 38 16.8	+571.6	14 48.18	54 14.06
	Moon I. L.	-	1 0 22.89	116.44	61.36	4 31 40.3	+561.6	14 48.71	54 15.99
	171 B. Piscium	6.3	0 55 50			6 4			
	88 Piscium	6.2	1 10 42			N. 6 35			

# 460 MOON-CULMINATING STARS, 1922.

## AT TRANSIT AT GREENWICH.

Date.	Name.	Mag.	Apparent Right Ascension.	Var. of Q's R.A. in 1 hour of Long.	Sid. Time of Semid. pass <sup>†</sup> Merid.	Apparent Declination.	Var. of Q's Dec. in 1 hour of Long.	Semi- diameter.	Hor. Par.
			h m s	"	s	° ' "	"	' "	' "
Dec. 27	Moon I. U.	9.3	1 23 46.57	117.59	61.66	N. 6 22 35.1	+546.8	14 49.98	54 20.67
	Moon I. L.	-	1 47 26.77	119.19	62.07	8 10 2.0	+526.8	14 51.98	54 28.00
	o Piscium	4.5	1 41 20			8 46			
	54 Ceti	6.0	1 46 47			10 40			
28	Moon I. U.	10.3	2 11 28.77	121.21	62.59	N. 9 52 57.5	+501.5	14 54.67	54 37.85
	Moon I. L.	-	2 35 57.44	123.62	63.20	11 30 13.9	+470.2	14 58.00	54 50.02
	25 Arietis	6.5	2 23 18			9 51			
	38 Arietis	5.2	2 40 46			12 7			
29	Moon I. U.	11.4	3 0 57.01	126.35	63.88	N. 13 0 38.0	+432.7	15 1.90	55 4.32
	Moon I. L.	-	3 26 30.89	129.33	64.62	14 22 51.5	+388.4	15 6.31	55 20.47
	B.D.+13°535	7.4	3 13 38			13 34			
	30 B. Tauri	6.4	3 33 29			15 11			
30	Moon I. U.	12.4	3 52 41.44	132.45	65.39	N. 15 35 31.7	+337.1	15 11.13	55 38.15
	Moon I. L.	-	4 19 29.75	135.60	66.16	16 37 13.3	+278.6	15 16.28	55 57.05
	48 Tauri	6.3	4 11 25			15 12			
	119 H <sup>1</sup> . Tauri	6.2	4 29 7			17 51			
31	Moon I. U.	13.4	4 46 55.44	138.65	66.89	N. 17 26 31.2	+213.2	15 21.67	56 16.78
	Moon I. L.	-	5 14 56.46	141.47	67.57	18 2 3.8	+141.2	15 27.18	56 36.97
	m Tauri	5.0	5 2 55			18 32			
	115 Tauri	5.3	5 22 42			N. 17 54			

*Note.*—The Mean Places of Moon-Culminating Stars are given in the section headed "Mean Places of Occultation Stars," on pages 471–474, with the exception of two stars whose positions are given below :—

Name of Star.	Magni- tude.	Right Ascension for 1922.0	Annual Proper Motion.	Declination for 1922.0	Annual Proper Motion.
		h m s	s	° ' "	"
B.D.+13°535 . . .	7.4	3 13 33.808	+0.0033	+13 33 40.46	-0.0
226 B. Ophiuchi . . .	6.9	17 28 26.678	+0.0001	-17 26 28.75	

In the year 1922 there will be two eclipses, both of the Sun.

I.—*An Annular Eclipse of the Sun, March 27-28, 1922, visible as a Partial Eclipse at Greenwich.*

### ELEMENTS OF THE ECLIPSE.

Greenwich Mean Time of  $\phi$  in Right Ascension, March 28<sup>d</sup> 1<sup>h</sup> 11<sup>m</sup> 36<sup>s</sup>.7

Sun and Moon's Right Ascension	-	-	-	-	-	-	-	-	<sup>h m s</sup>
Hourly Motions	-	-	-	-	-	-	-	-	<sup>s.</sup> 9°10' and 114°.33'
Sun's Declination	-	-	-	-	-	-	-	-	+ ° 2' 48" 33·7"
Hourly Motion -	-	-	-	-	-	-	-	-	+ ° 58·6"
Moon's Declination	-	-	-	-	-	-	-	-	+ ° 2' 58" 16·9"
Hourly Motion -	-	-	-	-	-	-	-	-	+ ° 16·2"
Sun's Equatorial Horizontal Parallax	-	-	-	-	-	-	-	-	8·8"
Sun's True Semidiameter	-	-	-	-	-	-	-	-	16" 1·1"
Moon's Equatorial Horizontal Parallax	-	-	-	-	-	-	-	-	54" 20·0"
Moon's True Semidiameter	-	-	-	-	-	-	-	-	14" 47·6"

### CIRCUMSTANCES OF THE ECLIPSE.

			Greenwich Mean Time.	Longitude from Greenwich.	Latitude.	
			d   h   m			
Eclipse begins -   -   -	March	27	22	1·2	+58° 24'	−11° 19'
Central Eclipse begins	-   „		23	9·0	+75 32	− 7 43
Central Eclipse at Local Apparent Noon	}   „	28	1	11·6	+16 34	+13 14
Central Eclipse ends	-   „		3	1·4	−47 26	+27 29
Eclipse ends -   -   -	„		4	9·2	−30 17	+23 53

**BESSELIAN ELEMENTS OF THE ANNULAR ECLIPSE OF THE SUN,  
MARCH 27-28, 1922.**

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Umbra on Fundamental Plane.	
	$x$	$y$	Log. sin $d$	Log. cos $d$	$\mu$	$l_1$	$l_2$
h m							
22 0	-1.54819	-0.30945	+8.68232	+9.99950	328° 39.5	+0.56874	+0.02271
10	1.46742	0.28394	8.68274	9.99950	331 9.5	0.56874	0.02271
20	1.38664	0.25842	8.68316	9.99949	333 39.6	0.56874	0.02271
30	1.30586	0.23291	8.68358	9.99949	336 9.6	0.56874	0.02271
40	1.22508	0.20739	8.68400	9.99949	338 39.6	0.56874	0.02271
50	1.14429	0.18188	8.68441	9.99949	341 9.7	0.56873	0.02270
23 0	-1.06350	-0.15636	+8.68482	+9.99949	343 39.7	+0.56873	+0.02270
10	0.98271	0.13085	8.68524	9.99949	346 9.8	0.56873	0.02270
20	0.90191	0.10533	8.68566	9.99949	348 39.8	0.56872	0.02269
30	0.82111	0.07982	8.68607	9.99949	351 9.9	0.56872	0.02269
40	0.74031	0.05431	8.68648	9.99949	353 39.9	0.56872	0.02268
50	0.65951	0.02880	8.68689	9.99949	356 9.9	0.56871	0.02268
0 0	-0.57870	-0.00329	+8.68730	+9.99949	358 40.0	+0.56870	+0.02267
10	0.49789	+0.02222	8.68772	9.99948	1 10.0	0.56870	0.02267
20	0.41709	0.04773	8.68813	9.99948	3 40.1	0.56869	0.02266
30	0.33628	0.07324	8.68854	9.99948	6 10.1	0.56868	0.02265
40	0.25547	0.09875	8.68895	9.99948	8 40.2	0.56867	0.02264
50	0.17466	0.12426	8.68936	9.99948	11 10.2	0.56866	0.02263
1 0	-0.09384	+0.14976	+8.68977	+9.99948	13 40.3	+0.56865	+0.02262
10	-0.01303	0.17527	8.69018	9.99948	16 10.3	0.56864	0.02261
20	+0.06778	0.20077	8.69059	9.99948	18 40.3	0.56863	0.02260
30	0.14860	0.22627	8.69100	9.99948	21 10.4	0.56862	0.02259
40	0.22941	0.25177	8.69141	9.99948	23 40.4	0.56861	0.02258
50	0.31022	0.27727	8.69182	9.99947	26 10.5	0.56860	0.02257
2 0	+0.39104	+0.30277	+8.69222	+9.99947	28 40.5	+0.56859	+0.02256
10	0.47186	0.32827	8.69263	9.99947	31 10.6	0.56857	0.02254
20	0.55267	0.35377	8.69304	9.99947	33 40.6	0.56856	0.02253
30	0.63348	0.37926	8.69345	9.99947	36 10.6	0.56854	0.02252
40	0.71430	0.40475	8.69386	9.99947	38 40.7	0.56853	0.02250
50	0.79511	0.43024	8.69426	9.99947	41 10.7	0.56851	0.02249
3 0	+0.87592	+0.45573	+8.69466	+9.99947	43 40.8	+0.56850	+0.02247
10	0.95674	0.48122	8.69507	9.99947	46 10.8	0.56848	0.02245
20	1.03755	0.50671	8.69548	9.99947	48 40.9	0.56847	0.02244
30	1.11836	0.53219	8.69589	9.99946	51 10.9	0.56845	0.02242
40	1.19917	0.55767	8.69629	9.99946	53 40.9	0.56843	0.02240
50	1.27998	0.58315	8.69669	9.99946	56 11.0	0.56841	0.02238
4 0	+1.36079	+0.60863	+8.69709	+9.99946	58 41.0	+0.56839	+0.02236
10	+1.44159	+0.63411	+8.69749	+9.99946	61 11.1	+0.56837	+0.02234

Greenwich Mean Time.	Log. $x'$ for 1 Minute.	Log. $y'$ for 1 Minute.	Log. $\mu'$ for 1 Minute.	Log. Tangents of Angles of Cones.	
				Penumbra.	Umbra.
h m					
22 0	+ 7.9073	+ 7.4068	+ 1.1762	+ 7.67063	+ 7.66846
23 0	7.9074	7.4068	1.1762	7.67062	7.66845
0 0	7.9074	7.4067	1.1762	7.67062	7.66845
1 0	7.9075	7.4066	1.1762	7.67061	7.66844
2 0	7.9075	7.4065	1.1762	7.67061	7.66844
3 0	7.9075	7.4064	1.1762	7.67060	7.66843
4 0	7.9075	7.4062	1.1762	7.67060	7.66843
5 0	+ 7.9074	+ 7.4059	+ 1.1762	+ 7.67059	+ 7.66842

# ECLIPSES, 1922.

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## PATH OF ANNULAR PHASE DURING THE ECLIPSE OF THE SUN, MARCH 27-28, 1922.

Greenwich Mean Time.	Northern Limit.		Central Line.		Southern Limit.		Duration of Annular Phase on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	6° 23'	+75° 44'	7° 43'	+75° 32'	9° 2'	+75° 21'	m s . . . .
23 <sup>h</sup> 10 <sup>m</sup>	6 6.0	70 54.2	7 11.5	68 14.2	8 17.7	66 16.9	5 32.3
15	4 50.7	59 54.3	5 56.3	58 44.4	7 1.5	57 39.5	5 52.3
20	3 50.3	54 28.6	4 54.2	53 30.8	5 57.6	52 35.8	6 5.6
25	2 54.1	50 30.1	3 56.4	49 37.8	4 58.2	48 47.2	6 16.6
30	2 0.2	+47 17.7	3 1.1	+46 28.5	4 1.5	+45 40.6	6 26.4
35	1 7.8	44 34.4	2 7.4	43 47.3	3 6.6	43 1.3	6 35.3
40	0 16.5	42 12.0	1 15.1	41 26.3	2 13.2	40 41.5	6 43.6
45	+ 0 33.9	40 4.9	0 23.7	39 20.3	1 20.9	38 36.4	6 51.3
50	1 23.6	38 9.4	+ 0 26.9	37 25.8	0 29.4	36 42.7	6 58.3
55	2 12.7	36 23.4	1 16.8	35 40.6	+ 0 21.3	34 58.2	7 4.8
0 0	+ 3 1.3	+34 45.4	+ 2 6.1	+34 3.2	+ 1 11.3	+33 21.4	7 10.9
5	3 49.5	33 13.7	2 54.9	32 32.1	2 0.7	31 50.8	7 16.5
10	4 37.2	31 47.3	3 43.2	31 6.1	2 49.6	30 25.3	7 21.6
15	5 24.6	30 24.9	4 31.1	29 44.3	3 38.0	29 4.0	7 26.4
20	6 11.7	29 6.2	5 18.6	28 26.0	4 25.9	27 46.1	7 30.7
25	6 58.6	27 50.3	6 5.8	27 10.7	5 13.4	26 31.3	7 34.6
30	+ 7 45.3	+26 37.2	+ 6 52.8	+25 58.0	+ 6 0.6	+25 19.0	7 38.2
35	8 31.8	25 26.0	7 39.4	24 47.3	6 47.4	24 8.8	7 41.2
40	9 18.1	24 16.4	8 25.8	23 38.1	7 33.9	23 0.0	7 43.8
45	10 4.1	23 8.0	9 11.9	22 30.1	8 20.1	21 52.4	7 45.9
50	10 50.0	22 0.5	9 57.8	21 23.0	9 6.0	20 45.7	7 47.7
55	11 35.7	20 53.5	10 43.4	20 16.4	9 51.5	19 39.5	7 49.0
1 0	+12 21.3	+19 46.5	+11 28.9	+19 9.9	+10 36.9	+18 33.5	7 49.8
5	13 6.8	18 39.4	12 14.2	18 3.3	11 22.0	17 27.4	7 50.2
10	13 52.2	17 31.9	12 59.3	16 56.3	12 6.8	16 20.9	7 50.1
15	14 37.5	16 23.5	13 44.2	15 48.5	12 51.3	15 13.7	7 49.6
20	15 22.5	15 13.9	14 28.9	14 39.5	13 35.6	14 5.2	7 48.6
25	16 7.5	14 2.7	15 13.4	13 29.1	14 19.6	12 55.5	7 47.1
30	+16 52.4	+12 49.9	+15 57.8	+12 17.0	+15 3.5	+11 44.1	7 45.1
35	17 37.2	11 34.8	16 42.0	11 2.7	15 47.1	10 30.6	7 42.7
40	18 21.7	10 17.2	17 25.9	9 45.9	16 30.4	9 14.6	7 39.8
45	19 6.1	8 56.4	18 9.6	8 26.0	17 13.3	7 55.6	7 36.4
50	19 50.5	7 31.8	18 53.2	7 2.5	17 56.1	6 33.1	7 32.6
55	20 34.8	6 3.0	19 36.6	5 34.9	18 38.6	5 6.7	7 28.3
2 0	+21 18.7	+ 4 29.2	+20 19.6	+ 4 2.4	+19 20.7	+ 3 35.5	7 23.5
5	22 2.4	2 49.6	21 2.3	2 24.3	20 2.4	1 58.9	7 18.2
10	22 45.9	+ 1 3.3	21 44.7	+ 0 39.7	20 43.7	+ 0 16.0	7 12.4
15	23 29.1	0 51.2	22 26.7	1 12.8	21 24.5	1 34.6	7 6.1
20	24 12.0	2 55.5	23 8.3	3 14.7	22 4.9	3 34.3	6 59.2
25	24 54.4	5 11.4	23 49.4	5 27.8	22 44.7	5 44.8	6 51.8
30	+25 36.1	7 41.4	+24 29.7	7 54.6	+23 23.6	8 8.6	6 43.9
35	26 17.1	10 29.5	25 9.1	10 38.8	24 1.6	10 49.3	6 35.3
40	26 57.1	13 42.1	25 47.4	13 46.2	24 38.2	13 51.9	6 26.0
45	27 35.5	17 28.4	26 24.0	17 25.5	25 13.1	17 25.0	6 15.9
50	28 11.7	22 6.4	26 58.2	21 53.1	25 45.4	21 43.6	6 4.4
55	28 43.4	28 19.4	27 27.9	27 47.1	26 13.1	27 21.6	5 50.9
3 0	+29 1.0	39 44.8	+27 44.8	37 49.2	+26 28.9	36 27.7	5 31.6
Limits.	+28 48	47 40	+27 29	47 27	+26 11	47 14	. . . .

At ARMAGH, a Partial Eclipse is visible, Magnitude 0.10.

			d	h	m	
Begins	-	-	Mar.	28	1	26
Greatest Phase	-	-	„	28	2	5
Ends	-	-	„	28	2	44
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	182°.
Angle from Vertex of First Contact	-	-	-	-	-	172°.
Angle from North Point of Last Contact	-	-	-	-	-	131°.
Angle from Vertex of Last Contact	-	-	-	-	-	108°.

At DUBLIN, a Partial Eclipse is visible, Magnitude 0.12.

			d	h	m	
Begins	-	-	Mar.	28	1	22
Greatest Phase	-	-	„	28	2	6
Ends	-	-	„	28	2	49
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	185°.
Angle from Vertex of First Contact	-	-	-	-	-	175°.
Angle from North Point of Last Contact	-	-	-	-	-	128°.
Angle from Vertex of Last Contact	-	-	-	-	-	104°.

At GLASGOW, a Partial Eclipse is visible, Magnitude 0.08.

			d	h	m	
Begins	-	-	Mar.	28	1	32
Greatest Phase	-	-	„	28	2	8
Ends	-	-	„	28	2	42
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	180°.
Angle from Vertex of First Contact	-	-	-	-	-	168°.
Angle from North Point of Last Contact	-	-	-	-	-	133°.
Angle from Vertex of Last Contact	-	-	-	-	-	112°.

At EDINBURGH, a Partial Eclipse is visible, Magnitude 0.09.

			d	h	m	
Begins	-	-	Mar.	28	1	32
Greatest Phase	-	-	„	28	2	9
Ends	-	-	„	28	2	44
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	181°.
Angle from Vertex of First Contact	-	-	-	-	-	169°.
Angle from North Point of Last Contact	-	-	-	-	-	133°.
Angle from Vertex of Last Contact	-	-	-	-	-	110°.

At LIVERPOOL, a Partial Eclipse is visible, Magnitude 0.14.

			d	h	m	
Begins	-	-	Mar.	28	1	23
Greatest Phase	-	-	„	28	2	10
Ends	-	-	„	28	2	55
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	188°.
Angle from Vertex of First Contact	-	-	-	-	-	175°.
Angle from North Point of Last Contact	-	-	-	-	-	126°.
Angle from Vertex of Last Contact	-	-	-	-	-	100°.

At DURHAM, a Partial Eclipse is visible, Magnitude 0.12.

			d	h	m	
Begins	-	-	Mar.	28	1	28
Greatest Phase	-	-	„	28	2	11
Ends	-	-	„	28	2	53
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	186°.
Angle from Vertex of First Contact	-	-	-	-	-	172°.
Angle from North Point of Last Contact	-	-	-	-	-	129°.
Angle from Vertex of Last Contact	-	-	-	-	-	103°.

At OXFORD, a Partial Eclipse is visible, Magnitude 0.19.

			d	h	m	
Begins	-	-	Mar.	28	1	19
Greatest Phase	-	-	„	28	2	13
Ends	-	-	„	28	3	5
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	192°.
Angle from Vertex of First Contact	-	-	-	-	-	179°.
Angle from North Point of Last Contact	-	-	-	-	-	121°.
Angle from Vertex of Last Contact	-	-	-	-	-	92°.

At GREENWICH, a Partial Eclipse is visible, Magnitude 0.20.

			d	h	m	
Begins	-	-	Mar.	28	1	19
Greatest Phase	-	-	„	28	2	15
Ends	-	-	„	28	3	8
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	194°.
Angle from Vertex of First Contact	-	-	-	-	-	179°.
Angle from North Point of Last Contact	-	-	-	-	-	120°.
Angle from Vertex of Last Contact	-	-	-	-	-	89°.

At CAMBRIDGE, a Partial Eclipse is visible, Magnitude 0.18.

			d	h	m	
Begins	-	-	Mar.	28	1	22
Greatest Phase	-	-	„	28	2	15
Ends	-	-	„	28	3	5
						} Greenwich Mean Time.
Angle from North Point of First Contact	-	-	-	-	-	192°.
Angle from Vertex of First Contact	-	-	-	-	-	177°.
Angle from North Point of Last Contact	-	-	-	-	-	121°.
Angle from Vertex of Last Contact	-	-	-	-	-	92°.

II.—*A Total Eclipse of the Sun*, September 20, 1922, invisible at Greenwich.

ELEMENTS OF THE ECLIPSE.

Greenwich Mean Time of  $\phi$  in Right Ascension, Sept. 20<sup>d</sup> 16<sup>h</sup> 47<sup>m</sup> 17<sup>s</sup>.9

Sun and Moon's Right Ascension	-	-	-	-	-	-	-	-	h	m	s
									11	50	30.63
Hourly Motions	-	-	-	-	-	-	-	-	88.98	and	1458.21
Sun's Declination	-	-	-	-	-	-	-	-	-	+	° 1' 42".7
Hourly Motion	-	-	-	-	-	-	-	-	-	-	0 58.3
Moon's Declination	-	-	-	-	-	-	-	-	-	-	0 48 0.3
Hourly Motion	-	-	-	-	-	-	-	-	-	-	- 11 53.1
Sun's Equatorial Horizontal Parallax	-	-	-	-	-	-	-	-			8.8
Sun's True Semidiameter	-	-	-	-	-	-	-	-			15 56.0
Moon's Equatorial Horizontal Parallax	-	-	-	-	-	-	-	-			61 24.1
Moon's True Semidiameter	-	-	-	-	-	-	-	-			16 43.0

CIRCUMSTANCES OF THE ECLIPSE.

	Greenwich Mean Time.	Longitude from Greenwich.	Latitude.
	d h m		
Eclipse begins - -	Sept. 20 14 4.3	- 57° 6'	+ 9° 50'
Central Eclipse begins	„ 14 59.9	- 43 17	+ 5 30
Central Eclipse at Local } Apparent Noon	„ 16 47.3	- 106 31	- 11 59
Central Eclipse ends -	„ 18 20.6	- 172 36	- 30 15
Eclipse ends - -	„ 19 16.2	- 158 47	- 25 54



**BESSELIAN ELEMENTS OF THE TOTAL ECLIPSE OF THE SUN,**  
**SEPTEMBER 20, 1922.**

Greenwich Mean Time.	Co-ordinates of Centre of Shadow on Fundamental Plane.		Direction of Axis of Shadow.			Radius of Penumbra and Umbra on Fundamental Plane.	
	$x$	$y$	Log. sin $d$ .	Log. cos $d$ .	$\mu$	$l_1$	$l_2$
<b>h m</b>							
14 0	-1.55007	+0.27295	+8.27247	+9.99992	211° 38.4	+0.53295	-0.01291
10	1.45744	0.24326	8.27141	9.99992	214 8.5	0.53296	0.01290
20	1.36480	0.21358	8.27034	9.99992	216 38.5	0.53297	0.01289
30	1.27216	0.18389	8.26927	9.99992	219 8.6	0.53298	0.01288
40	1.17952	0.15420	8.26820	9.99993	221 38.6	0.53299	0.01287
50	1.08687	0.12451	8.26712	9.99993	224 8.7	0.53299	0.01286
15 0	-0.99422	+0.09481	+8.26604	+9.99993	226 38.7	+0.53300	-0.01285
10	0.90157	0.06512	8.26496	9.99993	229 8.8	0.53301	0.01284
20	0.80892	0.03543	8.26388	9.99993	231 38.8	0.53302	0.01284
30	0.71626	+0.00574	8.26279	9.99993	234 8.9	0.53302	0.01283
40	0.62360	-0.02396	8.26170	9.99993	236 38.9	0.53303	0.01283
50	0.53094	0.05365	8.26061	9.99993	239 9.0	0.53303	0.01282
16 0	-0.43828	-0.08334	+8.25952	+9.99993	241 39.0	+0.53303	-0.01282
10	0.34562	0.11304	8.25842	9.99993	244 9.1	0.53304	0.01282
20	0.25296	0.14273	8.25732	9.99993	246 39.1	0.53304	0.01282
30	0.16029	0.17242	8.25622	9.99993	249 9.2	0.53304	0.01281
40	-0.06763	0.20211	8.25511	9.99993	251 39.2	0.53304	0.01281
50	+0.02503	0.23181	8.25400	9.99993	254 9.3	0.53304	0.01281
17 0	+0.11770	-0.26150	+8.25289	+9.99993	256 39.3	+0.53304	-0.01281
10	0.21036	0.29119	8.25178	9.99993	259 9.4	0.53304	0.01282
20	0.30302	0.32088	8.25066	9.99993	261 39.4	0.53303	0.01282
30	0.39568	0.35057	8.24954	9.99993	264 9.5	0.53303	0.01282
40	0.48834	0.38026	8.24842	9.99993	266 39.5	0.53303	0.01283
50	0.58100	0.40995	8.24729	9.99993	269 9.6	0.53302	0.01283
18 0	+0.67365	-0.43964	+8.24616	+9.99993	271 39.6	+0.53302	-0.01284
10	0.76631	0.46932	8.24503	9.99993	274 9.7	0.53301	0.01284
20	0.85896	0.49901	8.24390	9.99993	276 39.7	0.53300	0.01285
30	0.95161	0.52869	8.24276	9.99993	279 9.8	0.53300	0.01286
40	1.04425	0.55838	8.24162	9.99993	281 39.8	0.53299	0.01286
50	1.13690	0.58806	8.24048	9.99993	284 9.9	0.53298	0.01287
19 0	+1.22954	-0.61774	+8.23933	+9.99993	286 39.9	+0.53297	-0.01288
10	1.32218	0.64742	8.23818	9.99994	289 10.0	0.53296	0.01289
20	+1.41481	-0.67709	+8.23702	+9.99994	291 40.0	+0.53295	-0.01290

Greenwich Mean Time.	Log. $x'$ for 1 Minute.	Log. $y'$ for 1 Minute.	Log. $\mu'$ for 1 Minute.	Log. Tangents of Angles of Cones.	
				Penumbra.	Umbra.
<b>h m</b>					
14 0	+ 7.9668	- 7.4726	+ 1.1762	+ 7.66812	+ 7.66595
15 0	7.9669	7.4726	1.1762	7.66813	7.66596
16 0	7.9669	7.4727	1.1762	7.66813	7.66596
17 0	7.9669	7.4726	1.1762	7.66814	7.66597
18 0	7.9669	7.4726	1.1762	7.66814	7.66597
19 0	7.9668	7.4725	1.1762	7.66815	7.66598
20 0	+ 7.9667	- 7.4723	+ 1.1762	+ 7.66815	+ 7.66598

PATH OF TOTAL PHASE DURING THE ECLIPSE OF THE SUN,  
SEPTEMBER 20, 1922.

Green- wich Mean Time.	Northern Limit.		Central Line.		Southern Limit.		Duration of Total Phase on Central Line.
	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	Latitude.	Longitude from Greenwich.	
Limits.	+ 6° 15'	- 43° 20'	+ 5° 30'	- 43° 17'	+ 4° 44'	- 43° 14'	m. s.
15 <sup>h</sup> . 5 <sup>m</sup>	5 44.2	60 43.0	4 56.7	60 2.3	4 9.6	59 18.3	3 23.0
10	5 1.4	66 44.9	4 12.8	66 9.9	3 24.5	65 32.8	3 43.8
15	4 16.4	71 12.0	3 26.9	70 38.8	2 37.7	70 4.0	4 0.7
20	3 30.0	74 49.2	2 39.9	74 16.7	1 50.1	73 42.9	4 15.4
25	2 42.9	77 54.6	1 52.3	77 22.4	1 2.0	76 49.1	4 28.7
30	+ 1 55.0	- 80 37.9	+ 1 4.1	- 80 5.7	+ 0 13.4	- 79 32.6	4 40.7
35	1 6.7	83 4.6	+ 0 15.5	82 32.4	- 0 35.5	81 59.3	4 51.7
40	+ 0 18.0	85 18.6	- 0 33.5	84 46.2	1 24.8	84 13.1	5 1.7
45	- 0 31.2	87 22.4	1 22.8	86 49.8	2 14.3	86 16.6	5 10.9
50	1 20.7	89 18.0	2 12.4	88 45.3	3 4.0	88 12.0	5 19.3
55	2 10.3	91 6.9	3 2.2	90 34.1	3 54.0	90 0.8	5 26.8
16 0	- 3 0.3	- 92 50.3	- 3 52.3	- 92 17.5	- 4 44.2	- 91 44.2	5 33.5
5	3 50.5	94 29.3	4 42.6	93 56.5	5 34.6	93 23.2	5 39.4
10	4 41.0	96 4.7	5 33.2	95 31.8	6 25.3	94 58.6	5 44.5
15	5 31.9	97 37.1	6 24.1	97 4.3	7 16.2	96 31.2	5 48.9
20	6 22.9	99 7.2	7 15.2	98 34.5	8 7.4	98 1.5	5 52.4
25	7 14.1	100 35.6	8 6.5	100 3.1	8 58.8	99 30.3	5 55.1
30	- 8 5.7	- 102 2.9	- 8 58.1	- 101 30.5	- 9 50.5	- 100 58.0	5 57.1
35	8 57.5	103 29.4	9 50.0	102 57.3	10 42.6	102 25.1	5 58.3
40	9 49.6	104 55.7	10 42.2	104 24.0	11 34.9	103 52.2	5 58.7
45	10 42.0	106 22.3	11 34.7	105 51.0	12 27.5	105 19.6	5 58.3
50	11 34.6	107 49.6	12 27.5	107 18.8	13 20.5	106 48.0	5 57.1
55	12 27.7	109 18.3	13 20.7	108 48.0	14 13.8	108 17.7	5 55.1
17 0	- 13 21.0	- 110 48.7	- 14 14.2	- 110 19.0	- 15 7.5	- 109 49.4	5 52.3
5	14 14.8	112 21.5	15 8.1	111 52.5	16 1.5	111 23.6	5 48.7
10	15 8.9	113 57.1	16 2.3	113 29.0	16 55.9	113 1.1	5 44.4
15	16 3.5	115 36.5	16 57.0	115 9.3	17 50.7	114 42.4	5 39.3
20	16 58.4	117 20.2	17 52.1	116 54.1	18 46.1	116 28.4	5 33.4
25	17 53.8	119 9.2	18 47.7	118 44.4	19 41.9	118 20.0	5 26.7
30	- 18 49.7	- 121 4.8	- 19 43.8	- 120 41.3	- 20 38.2	- 120 18.4	5 19.3
35	19 46.2	123 8.0	20 40.5	122 46.2	21 35.1	122 25.0	5 11.1
40	20 43.4	125 20.8	21 37.8	125 0.9	22 32.5	124 41.6	5 2.0
45	21 41.3	127 45.3	22 35.8	127 27.5	23 30.6	127 10.5	4 52.1
50	22 40.1	130 24.5	23 34.5	130 9.2	24 29.3	129 54.9	4 41.2
55	23 39.7	133 22.6	24 34.1	133 10.4	25 29.0	132 59.3	4 29.3
18 0	- 24 40.4	- 136 45.6	- 25 34.7	- 136 37.1	- 26 29.5	- 136 30.0	4 16.2
5	25 42.5	140 44.2	26 36.6	140 40.4	27 31.1	140 38.7	4 1.7
10	26 46.4	145 37.5	27 40.1	145 40.7	28 34.2	145 46.5	3 45.2
15	27 53.3	152 12.3	28 46.3	152 27.6	29 39.6	152 47.3	3 25.1
20	29 8.2	164 21.0	30 0.0	165 38.8	30 52.1	167 32.4	2 52.8
Limits.	- 29 29	- 172 33	- 30 15	- 172 36	- 31 0	- 172 39	. . . .

At MAURITIUS, a Partial Eclipse is visible, Magnitude 0.28.

				d	h	m	
Begins	-	-	-	Sept.	20	14	44
Greatest Phase	-	-	-	"	20	15	27
Ends	-	-	-	"	20	16	14
} Greenwich Mean Time.							
Angle from North Point of First Contact	-	-	-	-	-	-	336°.
Angle from Vertex of First Contact	-	-	-	-	-	-	86°.
Angle from North Point of Last Contact	-	-	-	-	-	-	65°.
Angle from Vertex of Last Contact	-	-	-	-	-	-	179°.

At BOMBAY, a Partial Eclipse is visible, Magnitude 0.51.

				d	h	m	
Begins	-	-	-	Sept.	20	14	13
Greatest Phase	-	-	-	"	20	15	10
Ends	-	-	-	"	20	16	12
} Greenwich Mean Time.							
Angle from North Point of First Contact	-	-	-	-	-	-	261°.
Angle from Vertex of First Contact	-	-	-	-	-	-	332°.
Angle from North Point of Last Contact	-	-	-	-	-	-	144°.
Angle from Vertex of Last Contact	-	-	-	-	-	-	208°.

At MADRAS, a Partial Eclipse is visible, Magnitude 0.65.

				d	h	m	
Begins	-	-	-	Sept.	20	14	15
Greatest Phase	-	-	-	"	20	15	20
Ends	-	-	-	"	20	16	34
} Greenwich Mean Time.							
Angle from North Point of First Contact	-	-	-	-	-	-	271°.
Angle from Vertex of First Contact	-	-	-	-	-	-	347°.
Angle from North Point of Last Contact	-	-	-	-	-	-	138°.
Angle from Vertex of Last Contact	-	-	-	-	-	-	204°.

At PERTH, a Partial Eclipse is visible, Magnitude 0.61.

				d	h	m	
Begins	-	-	-	Sept.	20	16	14
Greatest Phase	-	-	-	"	20	17	29
Ends	-	-	-	"	20	18	40
} Greenwich Mean Time.							
Angle from North Point of First Contact	-	-	-	-	-	-	322°.
Angle from Vertex of First Contact	-	-	-	-	-	-	144°.
Angle from North Point of Last Contact	-	-	-	-	-	-	92°.
Angle from Vertex of Last Contact	-	-	-	-	-	-	316°.

At ADELAIDE, a Partial Eclipse is visible, Magnitude 0.75.

				d	h	m	
Begins	-	-	-	Sept.	20	16	52
Greatest Phase	-	-	„		20	18	2
Ends	-	-	-	„	20	19	6
} Greenwich Mean Time.							
Angle from North Point of First Contact	-	-	-	-	-	-	310°.
Angle from Vertex of First Contact	-	-	-	-	-	-	168°.
Angle from North Point of Last Contact	-	-	-	-	-	-	96°.
Angle from Vertex of Last Contact	-	-	-	-	-	-	329°.

At MELBOURNE, a Partial Eclipse is visible, Magnitude 0.70.

				d	h	m	
Begins	-	-	-	Sept.	20	17	2
Greatest Phase	-	-	„		20	18	7
Ends	-	-	-	„	20	19	6
} Greenwich Mean Time.							
Angle from North Point of First Contact	-	-	-	-	-	-	312°.
Angle from Vertex of First Contact	-	-	-	-	-	-	172°.
Angle from North Point of Last Contact	-	-	-	-	-	-	92°.
Angle from Vertex of Last Contact	-	-	-	-	-	-	323°.

At SYDNEY, a Partial Eclipse is visible, Magnitude 0.86.

				d	h	m	
Begins	-	-	-	Sept.	20	17	7
Greatest Phase	-	-	„		20	18	13
Ends	-	-	-	„	20	19	12
} Greenwich Mean Time.							
Angle from North Point of First Contact	-	-	-	-	-	-	302°.
Angle from Vertex of First Contact	-	-	-	-	-	-	170°.
Angle from North Point of Last Contact	-	-	-	-	-	-	101°.
Angle from Vertex of Last Contact	-	-	-	-	-	-	336°.

At WELLINGTON, a Partial Eclipse is partly visible, Magnitude 0.68.

				d	h	m	
Begins	-	-	-	Sept.	20	17	22
Greatest Phase	-	-	„		20	18	15
Angle from North Point of First Contact	-	-	-	-	-	-	309°.
Angle from Vertex of First Contact	-	-	-	-	-	-	177°.

# MEAN PLACES OF OCCULTATION STARS, 1922. 471

Name of Star.	Magni- tude.	Right Ascension for 1922.0.	Annual Proper Motion.	Declination for 1922.0.	Annual Proper Motion.
		h m s	s		
80 B. Piscium . . .	6.3	0 1 3.891	+0.0037	- 0 56' 9".79	-0.052
98 B. Piscium . . .	6.3	0 13 47.248	+0.0051	+ 1 15 18.67	+0.012
44 Piscium . . .	6.0	0 21 24.208	-0.0014	1 30 27.87	-0.023
147 B. Piscium . . .	5.9	0 44 17.277	+0.0483	4 52 47.96	-1.132
155 B. Piscium . . .	6.5	0 47 17.231	+0.0011	2 57 42.40	-0.094
171 B. Piscium . . .	6.3	0 55 46.937	+0.0008	+ 6 3 45.98	-0.005
73 Piscium . . .	6.2	1 0 50.076	+0.0022	5 14 18.89	-0.008
77 Piscium . . .	6.4	1 1 46.964	+0.0011	4 29 36.43	-0.114
e Piscium . . .	5.6	1 4 20.976	-0.0180	5 14 15.40	-0.171
ζ Piscium . . .	5.6	1 9 39.259	+0.0096	7 9 47.75	-0.052
88 Piscium . . .	6.2	1 10 38.840	-0.0011	+ 6 34 58.51	-0.026
263 B. Piscium . . .	6.4	1 24 17.051	+0.0027	7 33 27.64	+0.008
μ Piscium . . .	5.0	1 26 5.788	+0.0199	5 44 33.14	-0.027
o Piscium . . .	4.5	1 41 16.344	+0.0049	8 45 56.30	+0.045
54 Ceti . . .	6.0	1 46 43.473	-0.0048	10 39 27.54	-0.027
ξ <sup>1</sup> Ceti . . .	4.5	2 8 51.797	-0.0012	+ 8 28 52.84	-0.016
ξ Arietis . . .	5.5	2 20 37.980	+0.0006	10 15 28.67	-0.022
25 Arietis . . .	6.5	2 23 14.320	-0.0195	9 51 10.33	-0.200
31 Arietis . . .	5.7	2 32 22.511	+0.0189	12 6 36.51	-0.085
85 Ceti . . .	6.3	2 38 16.749	-0.0026	10 24 36.20	-0.012
38 Arietis . . .	5.2	2 40 42.382	+0.0081	+12 7 6.23	-0.079
147 B. Arietis . . .	5.8	3 2 6.654	+0.0016	12 53 13.93	-0.072
30 B. Tauri . . .	6.4	3 33 24.963	+0.0015	15 10 32.36	-0.003
33 B. Tauri . . .	6.3	3 35 0.871	+0.0028	16 17 2.70	-0.026
148 B. Tauri . . .	5.9	3 48 42.198	+0.0085	17 5 44.97	-0.036
162 B. Tauri . . .	6.3	3 56 9.353	-0.0003	+17 4 37.96	-0.061
179 B. Tauri . . .	5.9	4 3 16.990	+0.0104	14 57 17.67	-0.044
180 B. Tauri . . .	6.1	4 3 31.370	+0.0032	17 7 56.52	-0.022
193 B. Tauri . . .	6.2	4 8 2.624	+0.0005	17 4 40.51	-0.014
48 Tauri . . .	6.3	4 11 20.469	+0.0085	15 12 23.89	-0.024
γ Tauri . . .	3.9	4 15 21.138	+0.0083	+15 26 25.43	-0.026
δ Tauri . . .	3.9	4 18 26.042	+0.0076	17 21 38.59	-0.030
63 Tauri . . .	5.7	4 18 56.381	+0.0074	16 35 46.83	-0.027
64 Tauri . . .	4.9	4 19 35.852	+0.0084	17 15 52.03	-0.040
68 Tauri . . .	4.3	4 20 58.441	+0.0078	17 45 2.23	-0.031
70 Tauri . . .	6.4	4 21 10.003	+0.0073	+15 45 49.89	-0.026
71 Tauri . . .	4.6	4 21 53.928	+0.0075	15 26 32.66	-0.020
75 Tauri . . .	5.2	4 23 58.694	+0.0002	16 11 10.88	+0.020
θ <sup>1</sup> Tauri . . .	4.2	4 24 6.960	+0.0071	15 47 24.87	-0.023
θ <sup>2</sup> Tauri . . .	3.6	4 24 12.422	+0.0078	15 41 56.81	-0.020
264 B. Tauri . . .	4.8	4 26 5.667	+0.0084	+16 1 31.66	-0.027
85 Tauri . . .	6.0	4 27 24.311	+0.0070	15 41 7.74	-0.020
119 H <sup>1</sup> Tauri . . .	6.2	4 29 1.970	+0.0025	17 51 11.26	-0.031
275 B. Tauri . . .	6.5	4 29 10.164	+0.0010	16 9 38.44	+0.019
a Tauri ( <i>Aldebaran</i> )	1.1	4 31 26.560	+0.0047	16 21 13.19	-0.189
89 Tauri . . .	5.8	4 33 41.450	+0.0072	+15 52 41.41	-0.023
302 B. Tauri . . .	6.1	4 41 43.447	+0.0053	18 35 41.45	-0.067
i Tauri . . .	5.1	4 46 48.550	+0.0059	18 42 29.97	-0.035
318 B. Tauri . . .	5.7	4 52 51.913	-0.0008	17 1 57.05	-0.011
m Tauri . . .	5.0	5 2 50.303	+0.0381	18 32 30.03	+0.025
111 Tauri . . .	5.1	5 19 52.241	+0.0168	+17 18 44.05	-0.010
115 Tauri . . .	5.3	5 22 37.068	+0.0016	17 53 47.49	-0.021
117 Tauri . . .	6.0	5 23 29.908	+0.0017	17 10 30.11	-0.078
119 Tauri . . .	4.9	5 27 38.356	+0.0007	18 32 14.95	-0.004
167 H <sup>1</sup> Tauri . . .	5.5	5 27 42.938	+0.0025	+17 0 4.45	-0.040

# 472 MEAN PLACES OF OCCULTATION STARS, 1922.

Name of Star.		Magni- tude.	Right Ascension for 1922-0.			Annual Proper Motion.	Declination for 1922-0.		Annual Proper Motion.
			h	m	s	s	°	'	"
120	Tauri . . .	5.6	5	28	57.343	+0.0011	+18	29	9.22
122	Tauri . . .	5.5	5	32	32.081	+0.0034	16	59	35.71
130	Tauri . . .	5.6	5	42	53.322	+0.0004	17	42	3.93
	B.D.+19°1110 .	6.0	5	47	46.098	-0.0008	19	50	55.68
57	Orionis . . .	5.8	5	50	19.604	+0.0003	19	44	8.16
64	Orionis . . .	5.1	5	58	50.355	+0.0014	+19	41	35.06
19	B. Geminorum .	6.2	6	8	58.356	+0.0027	18	42	6.67
124	H <sup>1</sup> . Orionis . .	5.7	6	9	55.280	+0.0010	17	55	45.87
71	Orionis . . .	5.1	6	10	15.537	-0.0062	19	11	2.83
	B.D.+17°1191 .	6.5	6	11	51.900	+0.0011	17	12	30.06
287	B. Orionis . .	6.2	6	14	29.633	-0.0031	+17	21	24.74
292	B. Orionis . .	6.5	6	16	52.763	+0.0006	17	48	4.34
	B.D.+17°1275 .	6.2	6	26	38.803	-0.0008	16	59	40.74
26	Geminorum . .	5.2	6	37	51.883	+0.0010	17	43	21.84
74	B. Geminorum .	6.2	6	42	50.022	+0.0002	18	16	44.80
110	B. Geminorum .	6.2	6	57	53.338	..	+17	52	2.29
41	H <sup>1</sup> . Geminorum .	6.0	6	58	3.242	-0.0063	16	47	16.31
51	Geminorum . .	5.3	7	8	53.656	+0.0019	16	17	33.15
1	Geminorum . .	3.6	7	13	36.721	-0.0029	16	40	56.00
162	B. Geminorum .	5.7	7	27	18.615	+0.0018	17	15	12.64
68	Geminorum . .	5.2	7	29	9.503	-0.0007	+15	59	43.33
f	Geminorum . .	5.3	7	34	58.404	-0.0002	17	51	12.37
1	Cancrī . . .	6.0	7	52	33.839	-0.0021	15	59	58.98
2	B. Cancrī . . .	6.0	7	54	4.618	+0.0003	16	43	48.04
3	Cancrī . . .	5.7	7	56	19.285	-0.0001	17	31	24.40
5	Cancrī . . .	5.9	7	57	3.680	+0.0004	+16	40	17.48
30	B. Cancrī . . .	6.1	8	6	36.091	-0.0007	14	51	40.04
29	Cancrī . . .	5.9	8	24	16.277	-0.0017	14	28	11.62
84	B. Cancrī . . .	6.4	8	29	25.922	-0.0023	13	31	28.35
90	B. Cancrī . . .	6.3	8	31	45.409	+0.0006	15	35	3.36
A <sup>1</sup>	Cancrī . . .	5.5	8	38	54.592	-0.0002	+12	57	41.59
A <sup>2</sup>	Cancrī . . .	5.7	8	42	39.592	-0.0049	12	23	49.39
60	Cancrī . . .	5.7	8	51	40.160	-0.0009	11	55	29.37
a	Cancrī . . .	4.3	8	54	13.414	+0.0024	12	9	37.70
209	B. Cancrī . . .	6.5	9	5	32.283	-0.0008	11	52	58.19
222	B. Cancrī . . .	6.3	9	13	38.027	+0.0046	+11	49	42.77
ξ	Leonis . . .	5.1	9	27	44.629	-0.0063	11	38	45.60
h	Leonis . . .	5.2	9	27	46.882	-0.0001	10	3	37.83
o	Leonis . . .	3.8	9	36	59.393	-0.0096	10	14	52.78
18	Leonis . . .	5.8	9	42	11.374	-0.0006	12	10	11.72
19	Leonis . . .	6.4	9	43	14.395	-0.0049	+11	55	46.84
R	Leonis (var.) .	4.6	9	43	21.903	-0.0005	11	47	29.05
83	B. Leonis . . .	5.9	9	52	17.922	-0.0074	9	18	12.47
89	B. Leonis . . .	6.2	9	53	59.829	+0.0010	8	41	12.88
π	Leonis . . .	4.9	9	56	5.579	-0.0029	8	25	8.66
A	Leonis . . .	4.6	10	3	46.029	-0.0057	+10	22	49.53
43	Leonis . . .	6.3	10	18	55.635	-0.0017	6	56	21.15
155	B. Leonis . . .	6.5	10	19	11.594	-0.0167	6	5	25.41
44	Leonis . . .	5.9	10	21	8.744	+0.0018	9	10	54.63
48	Leonis . . .	5.2	10	30	43.958	-0.0072	7	21	20.34
35	Sextantis . . .	6.1	10	39	18.096	+0.0018	+5	9	27.07
37	Sextantis . . .	6.3	10	42	2.074	-0.0010	6	47	4.57
56	Leonis . . .	6.1	10	51	58.565	-0.0013	6	36	7.36
d	Leonis . . .	5.0	10	56	31.976	+0.0004	4	2	11.58
c	Leonis . . .	5.1	10	56	42.289	-0.0035	+6	31	15.20

# MEAN PLACES OF OCCULTATION STARS, 1922. 473

Name of Star.		Magni- tude.	Right Ascension. for 1922.0.			Annual Proper Motion.	Declination for 1922.0.		Annual Proper Motion.
			h	m	s	s	°	'	"
74	Leonis	5.7	11	2	55.552	-0.0253	+	2	22 45.74
75	Leonis	5.4	11	13	16.572	+0.0027		2	26 22.99
76	Leonis	6.0	11	14	54.774	-0.0038		2	4 42.09
79	Leonis	5.5	11	20	2.188	-0.0014		1	50 10.19
80	Leonis	6.4	11	21	49.608	-0.0051		4	17 22.82
83	Leonis	6.3	11	22	48.408	-0.0492	+	3	26 18.78
τ	Leonis	5.2	11	23	55.584	+0.0008		3	17 9.61
89	Leonis	5.7	11	30	22.479	-0.0121		3	29 36.81
9	B. Virginis	6.2	11	45	2.613	-0.0148		0	6 53.57
β	Virginis	3.8	11	46	37.936	+0.0494		2	12 15.74
27	B. Virginis	6.5	11	55	4.024	-0.0033	+	0	57 52.19
31	B. Virginis	6.4	11	57	2.181	-0.0006	-	1	19 56.06
13	Virginis	5.9	12	14	40.340	+0.0019		0	21 13.37
η	Virginis	4.0	12	15	54.915	-0.0036		0	14 0.43
162	B. Virginis	6.2	12	23	51.382	-0.0062		4	11 1.72
200	B. Virginis	6.3	12	27	38.040	-0.0022	-	4	37 20.58
319	B. Virginis	6.3	12	43	31.447	-0.0003		5	52 30.37
38	Virginis	6.1	12	49	11.462	-0.0173		3	7 45.89
91	G. Virginis	6.5	12	49	36.574	-0.0025		3	48 0.09
k	Virginis	5.7	12	55	38.352	-0.0027		3	23 29.58
48	Virginis	6.5	12	59	53.173	-0.0033	-	3	14 37.18
θ	Virginis	4.4	13	5	54.553	-0.0029		5	7 22.59
72	Virginis	6.1	13	26	21.414	+0.0023		6	4 4.96
l	Virginis	4.8	13	27	54.457	-0.0069		5	51 12.50
m	Virginis	5.2	13	37	30.929	-0.0073		8	18 35.71
575	B. Virginis	6.2	13	43	5.981	+0.0011	-	9	19 8.52
598	B. Virginis	6.1	13	50	52.564	-0.0121		7	40 32.30
623	B. Virginis	6.5	14	0	13.529	-0.0026		8	52 59.85
95	Virginis	5.4	14	2	35.138	-0.0098		8	56 30.34
96	Virginis	6.5	14	4	51.089	-0.0005		9	57 56.36
κ	Virginis	4.3	14	8	43.942	+0.0006	-	9	54 40.78
2	Libræ	6.3	14	19	13.599	-0.0014		11	21 30.56
4	G. Libræ	6.5	14	20	29.177	-0.0046		11	18 58.02
6	B. Libræ	6.2	14	32	50.669	-0.0591		11	58 27.07
22	B. Libræ	6.4	14	43	39.354	+0.0013		12	30 44.03
μ	Libræ	5.4	14	45	2.304	-0.0053	-	13	49 29.52
13	Libræ	5.7	14	50	8.573	-0.0048		11	34 51.31
o	Libræ	6.2	15	16	39.573	+0.0019		15	16 4.44
34	Libræ	6.0	15	26	16.169	+0.0012		16	20 33.80
ζ	Libræ	5.6	15	28	30.617	-0.0012		16	35 22.33
γ	Libræ	4.0	15	31	9.621	+0.0047	-	14	31 48.93
190	B. Libræ	6.5	15	39	2.253	-0.0009		14	47 38.82
η	Libræ	5.5	15	39	40.925	-0.0028		15	25 31.51
θ	Libræ	4.4	15	49	22.866	+0.0066		16	30 5.49
203	B. Libræ	6.2	15	52	9.877	+0.0047		14	36 6.49
49	Libræ	5.4	15	55	56.845	-0.0434	-	16	18 16.18
χ	Ophiuchi	4.9	16	22	30.037	-0.0006		18	16 49.16
φ	Ophiuchi	4.4	16	26	40.302	-0.0039		16	26 36.94
24	Scorpii	5.0	16	37	3.554	-0.0017		17	35 32.37
78	B. Ophiuchi	6.5	16	51	31.620	+0.0062		16	40 59.51
90	B. Ophiuchi	6.5	16	55	11.554	-0.0047	-	18	7 41.88
29	Ophiuchi	6.4	16	57	17.364	-0.0024		18	46 18.87
125	B. Ophiuchi	6.2	17	3	42.949	-0.0007		17	30 24.95
164	B. Ophiuchi	6.0	17	15	20.850	-0.0003		17	40 32.66
192	B. Ophiuchi	6.3	17	20	2.992	+0.0016	-	18	22 27.21

# 474 MEAN PLACES OF OCCULTATION STARS, 1922.

Name of Star.	Magni- tude.	Right Ascension for 1922-0.	Annual Proper Motion.	Declination for 1922-0.	Annual Proper Motion.
		h m s	s	° ' "	"
305 B. Ophiuchi . . .	6.3	17 51 19.723	+0.0019	-18 47 21.74	-0.003
6 Sagittarii . . .	6.5	17 56 51.188	+0.0005	17 9 17.77	-0.004
32 G. Sagittarii . . .	5.7	18 3 17.227	-0.0003	17 9 59.54	..
64 B. Sagittarii . . .	6.1	18 10 55.778	..	18 41 11.62	..
6 B. Scuti . . .	5.9	18 12 39.338	+0.0007	17 24 5.68	+0.013
52 G. Sagittarii . . .	6.4	18 12 54.120	+0.0004	-18 29 33.63	-0.036
17 H <sup>1</sup> . Sagittarii . . .	6.4	18 14 8.381	..	18 39 2.55	..
Y Sagittarii (var.) . .	5.4	18 16 47.658	..	18 53 44.99	-0.001
85 B. Sagittarii . . .	6.0	18 23 23.397	-0.0006	17 50 55.45	+0.006
95 B. Sagittarii . . .	5.7	18 25 36.869	+0.0041	18 46 45.06	-0.072
100 B. Sagittarii . . .	5.0	18 26 52.057	-0.0012	-18 27 26.34	-0.026
155 B. Sagittarii . . .	5.5	18 51 1.378	-0.0033	16 28 21.57	-0.180
187 B. Sagittarii . . .	6.4	19 2 34.616	+0.0036	18 51 34.65	-0.056
g Sagittarii . . .	4.0	19 17 9.000	-0.0020	17 59 42.99	+0.015
v Sagittarii . . .	4.4	19 17 15.695	+0.0002	16 6 9.52	-0.009
45 Sagittarii . . .	6.0	19 17 17.950	+0.0064	-18 27 14.04	-0.082
54 Sagittarii . . .	5.4	19 36 15.358	+0.0046	16 28 23.74	-0.047
e Sagittarii . . .	5.2	19 38 3.514	+0.0040	16 18 28.62	-0.015
283 B. Sagittarii . . .	5.5	19 39 6.743	+0.0118	15 39 6.69	-0.162
g Sagittarii . . .	5.1	19 53 31.689	+0.0004	15 41 57.34	-0.081
16 B. Capricorni . . .	6.2*	20 16 23.730	+0.0025	-15 1 54.19	+0.005
β Capricorni . . .	3.2	20 16 37.864	+0.0030	15 1 43.24	+0.007
31 B. Capricorni . . .	6.4	20 24 19.984	+0.0013	16 0 1.57	+0.019
27 G. Capricorni . . .	6.2	20 26 42.104	-0.0058	15 19 5.99	-0.092
45 B. Capricorni . . .	6.1	20 29 51.226	+0.0035	13 59 25.28	+0.060
τ Capricorni . . .	5.2	20 34 54.789	+0.0006	-15 13 45.26	-0.015
84 B. Capricorni . . .	6.0	20 46 24.012	+0.0106	12 50 3.11	-0.034
95 B. Capricorni . . .	5.9	20 54 22.926	..	14 47 6.25	..
v Aquarii . . .	4.5	21 5 20.794	+0.0057	11 41 17.59	-0.006
51 G. Aquarii . . .	6.5	21 10 3.554	-0.0010	10 55 43.52	-0.051
53 B. Aquarii . . .	6.5	21 11 43.373	+0.0004	-13 31 34.66	-0.039
18 Aquarii . . .	5.5	21 19 55.841	+0.0054	13 12 49.25	+0.007
19 Aquarii . . .	5.6	21 21 1.655	+0.0012	10 4 52.90	-0.164
72 B. Aquarii . . .	6.5	21 24 0.344	-0.0045	11 54 24.15	+0.008
137 B. Capricorni . . .	6.2	21 35 16.640	+0.0001	10 55 42.03	-0.010
c <sup>1</sup> Capricorni . . .	5.3	21 40 50.816	+0.0004	- 9 26 28.32	+0.008
c <sup>2</sup> Capricorni . . .	6.3	21 42 6.683	+0.0008	9 38 11.72	+0.001
λ Capricorni . . .	5.5	21 42 20.280	+0.0015	11 43 34.68	-0.004
96 B. Aquarii . . .	6.5	21 49 25.885	-0.0001	10 40 46.08	+0.006
θ Aquarii . . .	4.3	22 12 43.129	+0.0074	8 10 19.80	-0.018
150 B. Aquarii . . .	6.0	22 12 45.629	-0.0034	- 9 25 45.06	-0.005
ρ Aquarii . . .	5.3	22 16 5.758	+0.0008	8 12 48.54	-0.008
170 B. Aquarii . . .	6.0	22 19 26.841	+0.0012	7 35 20.68	+0.034
186 B. Aquarii . . .	6.1	22 27 13.016	+0.0129	6 57 13.92	-0.129
167 G. Aquarii . . .	6.3	22 34 16.495	+0.0010	8 18 11.00	+0.012
67 Aquarii . . .	6.4	22 39 9.951	+0.0015	- 7 22 17.91	-0.007
252 B. Aquarii . . .	5.8	22 51 8.188	-0.0003	5 24 12.59	+0.009
197 G. Aquarii . . .	6.3	22 53 14.912	-0.0024	5 13 38.06	+0.006
263 B. Aquarii . . .	6.1	22 57 29.551	+0.0007	5 7 51.69	+0.002
293 B. Aquarii . . .	5.5	23 11 33.196	-0.0011	3 55 18.19	+0.003
316 B. Aquarii . . .	6.5	23 16 13.235	+0.0191	- 4 20 38.96	-0.118
13 Piscium . . .	6.4	23 27 57.418	+0.0003	1 31 0.19	+0.023
14 Piscium . . .	5.9	23 30 8.401	+0.0073	- 1 40 42.23	-0.005
21 Piscium . . .	5.6	23 45 27.851	+0.0002	+ 0 38 34.56	-0.033
60 B. Piscium . . .	6.0	23 50 47.078	-0.0023	- 0 19 28.38	-0.013



# ELEMENTS OF OCCULTATIONS, 1922. 475

JANUARY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	$\gamma$	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
19 Aquarii	5.6	-0.84	+ 3.8	-10 4.8	1 443.5	+ 2 4.7	-1.2614	0.5301	+0.1414	-55	-90
72 B. Aquarii	6.5	0.84	3.2	11 54.3	6 15.1	+ 3 33.5	+0.9771	0.5296	0.1427	+78	+23
137 B. Capricorni	6.2	0.79	3.0	10 55.6	12 3.4	+ 9 11.5	+0.7356	0.5276	0.1473	+79	+7
c <sup>1</sup> Capricorni	5.3	0.76	3.1	9 26.4	14 56.4	+11 59.5	-0.4850	0.5267	0.1494	+ 5	-66
c <sup>2</sup> Capricorni	6.3	0.75	3.0	9 38.1	15 35.8	-11 22.3	-0.1703	0.5265	0.1499	+22	-44
$\theta$ Aquarii	4.3	-0.61	+ 2.1	- 8 10.3	2 736.0	+ 4 9.9	+0.6896	0.5222	+0.1600	+81	+ 4
$\rho$ Aquarii	5.3	0.60	2.0	8 12.8	9 22.8	+ 5 53.6	+1.0211	0.5218	0.1610	+82	+26
170 B. Aquarii	6.0	0.58	2.0	7 35.3	11 8.9	+ 7 36.7	+0.6138	0.5214	0.1619	+74	0
186 B. Aquarii	6.1	0.54	1.8	6 57.2	15 15.4	+11 36.1	+0.5783	0.5206	0.1639	+72	- 2
252 B. Aquarii	5.8	0.40	1.3	5 24.2	3 357.9	- 0 3.2	+0.9748	0.5188	0.1689	+85	+22
197 G. Aquarii	6.3	-0.39	+ 1.3	- 5 13.6	5 5.5	+ 1 2.4	+0.9696	0.5186	+0.1693	+85	+22
263 B. Aquarii	6.1	0.37	1.1	5 7.8	7 21.2	+ 3 14.2	+1.2466	0.5184	0.1700	+85	+47
293 B. Aquarii	5.5	0.28	0.9	3 55.3	14 51.5	+10 31.7	+1.1890	0.5180	0.1719	+86	+40
13 Piscium	6.4	0.17	1.0	1 31.0	23 37.0	+ 4 57.8	+0.0394	0.5179	0.1735	+36	-32
14 Piscium	5.9	0.16	0.8	- 1 40.7	4 046.9	- 3 49.9	+0.4203	0.5180	0.1736	+61	-11
21 Piscium	5.6	-0.06	+ 1.0	+ 0 38.6	8 57.0	+ 4 6.2	-0.7233	0.5185	+0.1742	- 6	-89
60 B. Piscium	6.0	-0.04	+ 0.4	- 0 19.5	11 46.8	+ 6 51.1	+0.8373	0.5188	0.1742	+90	+13
98 B. Piscium	6.3	+0.11	0.0	+ 1 15.3	23 57.8	- 5 18.9	+1.2137	0.5207	0.1734	+90	+43
147 B. Piscium	5.9	0.32	- 0.1	4 52.8	5 15 55.5	+10 11.0	-0.0194	0.5250	0.1699	+33	-35
171 B. Piscium	6.3	0.40	0.2	6 3.8	21 51.8	- 8 3.2	-0.3068	0.5270	0.1679	+18	-52
73 Piscium	6.2	+0.42	- 0.7	+ 5 14.3	6 0 27.6	- 5 32.0	+1.0256	0.5280	+0.1669	+90	+27
c Piscium	5.6	0.44	0.9	5 14.2	2 15.5	- 3 47.4	+1.3254	0.5288	0.1661	+79	+65
$\zeta$ Piscium	5.6	0.49	0.4	7 9.8	4 58.0	- 1 9.8	-0.3216	0.5298	0.1649	+17	-52
88 Piscium	6.2	0.49	0.7	6 35.0	5 28.3	- 0 40.4	+0.3924	0.5300	0.1647	+59	-11
263 B. Piscium	6.4	0.58	0.9	7 38.4	12 22.3	+ 6 1.1	+0.4579	0.5331	0.1611	+64	- 7
o Piscium	4.5	+0.69	- 1.3	+ 8 45.9	20 51.1	- 9 45.7	+0.4954	0.5373	+0.1559	+67	- 4
54 Ceti	6.0	0.74	0.8	10 39.4	23 32.7	- 7 9.0	-1.1256	0.5388	0.1541	-35	-79
31 Arietis	5.7	1.00	2.5	12 6.6	7 21 31.3	- 9 52.5	+0.5148	0.5519	0.1351	+69	- 1
38 Arietis	5.2	1.04	2.9	12 7.1	8 1 25.1	- 6 6.4	+1.0230	0.5545	0.1310	+90	+32
30 B. Tauri	6.4	1.33	4.4	15 10.5	9 1 16.6	- 7 3.6	+0.5772	0.5710	0.1008	+76	+ 7
33 B. Tauri	6.3	+1.36	- 4.2	+16 17.0	1 58.8	- 6 22.9	-0.5092	0.5715	+0.0998	+ 6	-57
148 B. Tauri	5.9	1.42	4.6	17 5.7	7 57.0	- 0 37.4	-0.7826	0.5756	0.0908	-11	-73
162 B. Tauri	6.3	1.45	5.0	17 4.6	11 10.0	+ 2 28.6	-0.4780	0.5778	0.0857	+ 7	-53
180 B. Tauri	6.1	1.48	5.3	17 7.9	14 19.3	+ 5 31.2	-0.2719	0.5800	0.0805	+19	-39
193 B. Tauri	6.2	1.50	5.5	17 4.6	16 14.9	+ 7 22.5	-0.0633	0.5813	0.0773	+31	-26
$\delta$ Tauri	3.9	+1.54	- 6.0	+17 21.5	20 38.5	+11 36.4	-0.0314	0.5842	+0.0698	+33	-23
63 Tauri	5.7	1.53	6.2	16 35.7	20 51.3	+11 48.7	+0.7708	0.5844	0.0604	+90	+22
64 Tauri	4.9	1.54	6.0	17 15.8	21 7.9	-11 55.2	+0.1017	0.5845	0.0689	+40	-16
68 Tauri	4.3	1.55	6.0	17 44.9	21 42.6	-11 21.8	-0.3594	0.5849	0.0679	+14	-43
119 H <sup>1</sup> . Tauri	6.2	1.58	6.3	17 51.1	10 1 5.0	- 8 7.1	-0.2450	0.5870	0.0619	+20	-35
302 B. Tauri	6.1	+1.63	- 6.8	+18 35.6	6 20.8	- 3 3.1	-0.7034	0.5903	+0.0522	- 6	-70
i Tauri	5.1	1.64	7.0	18 42.4	8 26.4	- 1 2.1	-0.7132	0.5915	0.0483	- 7	-70
318 B. Tauri	5.7	1.64	7.6	17 1.8	10 55.4	+ 1 21.2	+1.1124	0.5930	0.0435	+90	+49
m Tauri	5.0	1.68	7.7	18 32.4	14 59.2	+ 5 15.7	-0.2663	0.5952	0.0356	+19	-34
111 Tauri	5.1	1.71	8.7	17 18.6	21 51.8	+11 52.4	+1.1784	0.5987	0.0218	+90	+58
115 Tauri	5.3	+1.72	- 8.8	+17 53.6	22 57.9	-11 4.0	+0.6084	0.5992	+0.0195	+80	+17
119 Tauri	4.9	1.74	8.8	18 32.1	10 58.5	- 9 8.2	-0.0058	0.6002	0.0153	+34	-17
120 Tauri	5.6	1.74	8.9	18 29.0	1 30.1	- 8 37.9	+0.0542	0.6004	0.0143	+38	-13
130 Tauri	5.6	1.76	9.6	17 41.9	7 2.7	- 3 18.2	+0.8926	0.6027	0.0027	+90	+36
B. D. + 19 <sup>o</sup> 1110	6.0	1.79	9.5	19 50.8	8 58.6	- 1 26.9	-1.2702	0.6034	-0.0014	-67	-70
57 Orionis	5.8	+1.79	- 9.6	+19 44.0	9 59.3	- 0 28.7	-1.1579	0.6037	-0.0035	-43	-70

## 476 ELEMENTS OF OCCULTATIONS, 1922.

JANUARY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922-0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	F	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
64 Orionis	5.1	+1.80	-9.9	+19 41.4	11 13 20.7	+ 2 44.8	-1.1367	0.6049	-0.0107	-40	-70
19 B. Geminorum	6.2	1.80	10.4	18 41.9	17 19.6	+ 6 34.2	-0.1996	0.6061	0.0192	+23	-28
124 H <sup>1</sup> Orionis	5.7	1.79	10.6	17 55.6	17 42.0	+ 6 55.7	+0.5676	0.6062	0.0200	+75	+14
71 Orionis	5.1	1.81	10.4	19 10.9	17 49.9	+ 7 3.3	-0.6929	0.6062	0.0202	- 6	-67
287 B. Orionis	6.2	1.79	10.8	17 21.2	19 29.4	+ 8 38.9	+1.1014	0.6066	0.0238	+90	+50
292 B. Orionis	6.5	+1.80	-10.8	+17 47.9	20 25.5	+ 9 32.8	+0.6329	0.6069	-0.0258	+83	+18
26 Geminorum	5.2	1.81	11.5	17 43.2	12 436.9	- 6 35.4	+0.4262	0.6084	0.0433	+62	+ 5
74 B. Geminorum	6.2	1.82	11.6	18 16.6	6 33.0	- 4 44.1	-0.2163	0.6086	0.0475	+22	-32
110 B. Geminorum	6.2	1.81	12.1	17 51.8	12 24.2	+ 0 53.1	-0.1202	0.6091	0.0599	+28	-27
41 H <sup>1</sup> Geminorum	6.0	1.80	12.2	16 47.1	12 28.0	+ 0 56.7	+0.9490	0.6091	0.0600	+90	+35
51 Geminorum	5.3	+1.80	-12.4	+16 17.3	16 40.7	+ 4 59.3	+1.1681	0.6092	-0.0688	+90	+53
$\lambda$ Geminorum	3.6	1.80	12.6	16 40.7	18 30.7	+ 6 44.9	+0.6514	0.6091	0.0726	+85	+15
162 B. Geminorum	5.7	1.80	12.8	17 15.0	23 50.2	+11 51.6	-0.3304	0.6089	0.0834	+16	-42
68 Geminorum	5.2	1.79	12.9	15 59.5	13 03.4	-11 27.0	-0.8548	0.6088	0.0848	+90	+26
f Geminorum	5.3	1.79	13.0	17 51.0	2 49.2	- 9 16.6	-1.1811	0.6086	0.0893	-44	-72
1 Cancri	6.0	+1.76	-13.3	+15 59.8	9 40.8	- 2 41.6	-0.0061	0.6075	-0.1026	+34	-25
2 B. Cancri	6.0	1.76	13.4	16 43.6	10 16.2	- 2 7.5	-0.7882	0.6074	0.1037	-11	-73
5 Cancri	5.9	1.76	13.4	16 40.1	11 26.2	- 1 0.3	-0.8525	0.6072	0.1058	-15	-73
30 B. Cancri	6.1	1.74	13.5	14 51.4	15 10.4	+ 2 35.0	+0.5261	0.6064	0.1127	+70	+ 4
29 Cancri	5.9	1.70	13.6	14 28.0	22 7.4	+ 9 15.3	+0.0860	0.6045	0.1248	+40	-22
84 B. Cancri	6.4	+1.69	-13.6	+13 31.2	14 09.6	+11 12.8	+0.7597	0.6039	-0.1282	+90	+16
A <sup>1</sup> Cancri	5.5	1.67	13.6	12 57.5	3 54.8	- 9 10.8	+0.8215	0.6027	0.1342	+90	+19
A <sup>2</sup> Cancri	5.7	1.66	13.5	12 23.6	5 24.2	- 7 44.9	+1.1759	0.6022	0.1365	+90	+47
60 Cancri	5.7	1.64	13.5	11 55.3	8 59.4	- 4 18.1	+1.1410	0.6010	0.1420	+90	+42
$\alpha$ Cancri	4.3	1.63	13.5	12 9.4	10 0.6	- 3 19.4	+0.7633	0.6006	0.1435	+90	+14
209 B. Cancri	6.5	+1.61	-13.5	+11 52.7	14 32.6	+ 1 2.1	+0.3717	0.5989	-0.1499	+58	- 9
222 B. Cancri	6.3	1.58	13.4	11 49.5	17 48.1	+ 4 10.0	-0.0704	0.5976	0.1542	+30	-34
$\xi$ Leonis	5.1	1.54	13.3	11 38.5	23 30.9	+ 9 39.7	-0.7922	0.5952	0.1613	-10	-78
h Leonis	5.2	1.55	13.0	10 3.4	23 31.8	+ 9 40.6	+0.7675	0.5953	0.1613	+90	+13
o Leonis	3.8	1.52	13.0	10 14.7	15 317.0	-10 42.9	-0.0303	0.5937	0.1655	+33	-32
83 B. Leonis	5.9	+1.47	-12.6	+ 9 18.0	9 33.8	- 4 40.3	-0.1590	0.5910	-0.1719	+25	-41
89 B. Leonis	6.2	1.47	12.5	8 41.0	10 15.8	- 3 59.9	+0.3288	0.5907	0.1725	+54	-14
$\pi$ Leonis	4.9	1.46	12.4	8 24.9	11 7.7	- 3 10.0	+0.4436	0.5903	0.1733	+63	- 8
43 Leonis	6.3	1.39	11.6	6 56.2	20 37.3	+ 5 58.3	+0.2230	0.5863	0.1810	+48	-20
55 B. Leonis	6.5	1.40	11.4	6 5.2	20 44.0	+ 6 4.8	+1.0424	0.5862	0.1810	+90	+29
48 Leonis	5.2	+1.34	-11.5	+ 7 21.1	16 134.7	+10 44.8	-1.0950	0.5841	-0.1841	-32	-83
35 Sextantis	6.1	1.33	10.8	5 9.3	5 11.8	- 9 46.0	+0.4125	0.5827	0.1861	+60	-11
d Leonis	5.0	1.27	10.0	4 2.0	12 31.6	- 2 42.3	+0.1492	0.5797	0.1892	+43	-26
p <sup>4</sup> Leonis	5.7	1.25	9.4	2 22.6	15 15.9	- 0 3.9	+1.2784	0.5787	0.1901	+90	+52
75 Leonis	5.4	1.21	9.0	2 26.2	19 42.9	+ 4 13.4	+0.3709	0.5770	0.1912	+57	-14
76 Leonis	6.0	+1.20	- 8.9	+ 2 4.6	20 25.3	+ 4 54.4	+0.5961	0.5768	-0.1913	+75	- 1
79 Leonis	5.5	1.19	8.6	1 50.0	22 38.2	+ 7 2.4	+0.4140	0.5760	0.1916	+60	-12
9 B. Virginis	6.2	1.09	7.2	+ 0 6.8	19 931.2	- 6 27.8	+0.0466	0.5725	0.1919	+37	-32
31 B. Virginis	6.4	1.05	6.3	- 1 20.0	14 47.0	- 1 23.2	+0.4912	0.5709	0.1912	+66	- 7
62 B. Virginis	6.2	0.95	4.4	4 11.1	18 238.5	+10 3.4	+1.1207	0.5680	0.1876	+86	+34
100 B. Virginis	6.3	+0.94	- 4.1	- 4 37.4	4 19.2	+11 40.7	+1.2507	0.5676	-0.1869	+85	+48
119 B. Virginis	6.3	0.88	- 3.0	5 52.6	11 24.1	- 5 29.1	+1.2128	0.5663	0.1834	+84	+43
JUPITER	-1.7	..	..	6 0.4	23 31.6	+ 6 13.2	-0.8308	0.5630	0.1750	-14	-90
m Virginis	5.2	0.62	+ 0.1	8 18.6	19 1138.9	- 6 4.3	-0.5407	0.5635	0.1652	+ 2	-70
175 B. Virginis	6.2	0.60	0.6	9 19.1	14 10.0	- 3 38.4	+0.0843	0.5633	0.1628	+36	-30
96 Virginis	6.5	+0.50	+ 1.7	- 9 57.9	23 59.1	+ 5 50.5	-0.8007	0.5630	-0.1527	-15	-90

# ELEMENTS OF OCCULTATIONS, 1922. 477

JANUARY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	P	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
$\kappa$ Virginis	4.3	+0.48	+1.8	-9 54.6	20 1 44.3	+7 32.2	-1.1239	0.5630	-0.1508	-39	-90
2 Libræ	6.3	0.43	2.8	11 21.5	6 28.8	-11 53.0	-0.3267	0.5629	0.1454	+12	-54
4 G. Libræ	6.5	0.43	2.8	11 18.9	7 2.9	-11 20.1	-0.4534	0.5629	0.1447	+5	-64
6 B. Libræ	6.2	0.36	3.5	11 58.4	12 38.0	-5 56.5	-0.5595	0.5629	0.1379	-2	-73
22 B. Libræ	6.4	0.31	4.0	12 30.7	17 31.1	-1 13.4	-0.6585	0.5630	0.1317	-8	-84
$\mu$ Libræ	5.4	+0.32	+4.5	-13 49.4	18 8.6	-0 37.1	+0.6311	0.5630	-0.1309	+70	+1
0 Libræ	6.2	0.16	5.9	15 16.0	21 8 25.5	-10 49.5	+0.4163	0.5634	0.1113	+51	-11
34 Libræ	6.0	0.11	6.5	16 20.5	12 45.9	-6 38.0	+1.0815	0.5635	0.1049	+74	+33
$\zeta$ Libræ	5.6	0.10	6.6	16 35.3	13 46.6	-5 39.3	+1.2371	0.5635	0.1034	+73	+51
$\gamma$ Libræ	4.0	0.07	6.0	14 31.7	14 58.3	-4 30.1	-1.0597	0.5635	0.1016	-39	-90
190 B. Libræ	6.5	+0.03	+6.3	-14 47.5	18 31.7	-1 4.0	-1.1346	0.5636	-0.0963	-46	-90
$\eta$ Libræ	5.5	+0.04	6.5	15 25.4	18 49.1	-0 47.2	-0.4947	0.5636	0.0958	-3	-68
0 Libræ	4.4	-0.01	7.1	16 30.0	23 11.8	+3 26.5	+0.2400	0.5637	0.0891	+38	-21
49 Libræ	5.4	0.05	7.1	16 18.2	22 2 9.6	+6 18.3	-0.2262	0.5637	0.0844	+11	-48
$\chi$ Ophiuchi	4.9	0.18	8.1	18 16.7	14 9.0	-6 7.0	+0.9820	0.5638	0.0651	+72	+25
$\varphi$ Ophiuchi	4.4	-0.20	+7.6	-16 26.5	16 2.0	-4 17.9	-1.0989	0.5638	-0.0620	-46	-90
24 Scorpæ	5.0	0.25	8.1	17 35.4	20 43.7	+0 14.2	-0.1447	0.5637	0.0542	+12	-43
90 B. Ophiuchi	6.5	0.34	8.4	18 7.6	23 4 56.1	+8 9.9	+0.0415	0.5633	0.0404	+21	-32
29 Ophiuchi	6.4	0.34	8.6	18 46.2	5 53.1	+9 5.0	+0.6954	0.5633	0.0388	+68	+6
125 B. Ophiuchi	6.2	0.37	8.2	17 30.3	8 47.9	+11 53.8	-0.7702	0.5631	0.0338	-25	-90
164 B. Ophiuchi	6.0	-0.43	+8.3	-17 40.4	14 4.8	-7 0.0	-0.7450	0.5626	-0.0249	-24	-90
192 B. Ophiuchi	6.3	0.45	8.5	18 22.3	16 13.0	-4 56.1	-0.0415	0.5625	-0.0212	+15	-37
305 B. Ophiuchi	6.3	0.58	8.4	18 47.2	24 6 29.7	+8 51.6	+0.2785	0.5607	+0.0031	+32	-18
64 B. Sagittarii	6.1	0.65	8.2	18 41.1	15 30.2	-6 26.1	+0.2634	0.5592	0.0182	+32	-19
6 B. Scuti	5.9	0.65	8.0	17 24.0	16 18.0	-5 39.8	-1.1190	0.5590	0.0195	-52	-90
52 G. Sagittarii	6.4	-0.65	+8.2	-18 29.4	16 24.8	-5 33.3	+0.0699	0.5590	+0.0197	+21	-30
17 H <sup>1</sup> Sagittarii	6.4	0.66	8.2	18 38.9	16 59.1	-5 0.1	+0.2533	0.5589	0.0206	+32	-20
Y Sagit. (var.)	5.4	0.67	8.2	18 53.6	18 12.7	-3 49.0	+0.5466	0.5586	0.0226	+53	-3
85 B. Sagittarii	6.0	0.69	7.9	17 50.8	21 15.8	-0 52.0	-0.5166	0.5580	0.0277	-11	-70
95 B. Sagittarii	5.7	0.70	8.0	18 46.6	22 17.6	+0 7.8	+0.5265	0.5578	0.0293	+52	-4
100 B. Sagittarii	5.0	-0.70	+7.9	-18 27.3	22 52.5	+0 41.5	+0.1932	0.5577	+0.0303	+29	-23
NEW MOON.											
0 Aquarii	4.3	-0.71	+1.0	-8 10.3	29 14 17.7	-11 20.9	+0.5043	0.5245	+0.1588	+65	-6
0 Aquarii	5.3	0.70	0.8	8 12.8	16 4.2	-9 37.5	+0.8329	0.5241	0.1597	+82	+13
170 B. Aquarii	6.0	-0.69	+0.8	-7 35.3	17 50.0	-7 54.7	+0.4213	0.5237	+0.1607	+59	-11
186 B. Aquarii	6.1	0.66	+0.6	6 57.2	21 55.8	-3 56.0	+0.3778	0.5229	0.1627	+56	-14
252 B. Aquarii	5.8	0.58	-0.1	5 24.2	30 10 36.6	+8 23.1	+0.7522	0.5208	0.1679	+85	+7
197 G. Aquarii	6.3	0.57	0.2	5 13.6	11 44.1	+9 28.6	+0.7452	0.5206	0.1683	+85	+8
263 B. Aquarii	6.1	0.55	0.3	5 7.9	13 59.6	+11 40.3	+1.0192	0.5203	0.1690	+85	+26
293 B. Aquarii	5.5	-0.49	-0.7	-3 55.3	21 29.6	-5 2.6	+0.9497	0.5196	+0.1709	+86	+20
13 Piscium	6.4	0.41	0.8	1 31.0	31 6 15.4	+3 28.0	-0.2164	0.5191	0.1724	+22	-47
14 Piscium	5.9	0.40	0.9	-1 40.7	7 25.4	+4 36.2	+0.1644	0.5191	0.1726	+44	-25
21 Piscium	5.6	0.32	1.0	+0 38.6	15 36.6	-11 26.6	-0.9947	0.5191	0.1731	-24	-89
60 B. Piscium	6.0	-0.31	-1.4	-0 19.5	18 27.1	-8 41.0	+0.5608	0.5192	+0.1731	+73	-3

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98 B. Piscium	6.3	-0.19	-1.9	+1 15.3	1 6 42.2	+3 13.1	+0.9367	0.5202	+0.1722	+90	+20
147 B. Piscium	5.9	-0.01	2.2	4 52.8	22 49.0	-5 8.0	-0.3151	0.5229	0.1686	+17	-52
171 B. Piscium	6.3	+0.05	-2.2	+6 3.7	2 4 50.0	+0 42.6	-0.6078	0.5243	+0.1664	+1	-75

## 478 ELEMENTS OF OCCULTATIONS, 1922.

## FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	<i>Y</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
73 Piscium	6.2	+0.07	-2.7	+5 14.3	2 7 27.9	+3 15.9	+0.7348	0.5250	+0.1654	+90	+8
e Piscium	5.6	0.09	2.8	5 14.2	9 17.5	+5 2.2	+1.0368	0.5255	0.1646	+90	+28
z Piscium	5.6	0.14	2.4	7 9.8	12 2.5	+7 42.4	-0.6253	0.5263	0.1634	0	-76
88 Piscium	6.2	0.13	2.6	6 34.9	12 33.3	+8 12.4	+0.0951	0.5265	0.1631	+40	-27
263 B. Piscium	6.4	0.22	2.9	7 33.4	19 34.5	-8 59.0	+0.1603	0.5288	0.1595	+44	-23
o Piscium	4.5	+0.32	-3.2	+8 45.9	3 4 13.5	-0 35.6	+0.1990	0.5321	+0.1543	+46	-21
31 Arietis	5.7	0.62	4.1	12 6.5	4 5 30.6	-0 5.4	+0.2300	0.5442	0.1336	+48	-16
38 Arietis	5.2	0.67	4.4	12 7.0	9 31.2	+3 47.0	+0.7479	0.5464	0.1296	+90	+13
147 B. Arietis	5.8	0.79	5.1	12 53.1	19 40.2	-10 23.2	+1.1788	0.5523	0.1184	+90	+48
30 B. Tauri	6.4	0.98	5.6	15 10.4	5 10 7.5	+3 35.2	+0.3216	0.5612	0.1001	+55	-8
33 B. Tauri	6.3	+1.00	-5.2	+16 17.0	10 51.1	+4 17.3	-0.7790	0.5616	+0.0991	-10	-74
148 B. Tauri	5.9	1.08	5.5	17 5.7	17 1.2	+10 14.7	-1.0481	0.5655	0.0903	-30	-73
162 B. Tauri	6.3	1.12	5.9	17 4.5	20 20.6	-10 32.9	-0.7346	0.5677	0.0854	-7	-73
180 B. Tauri	6.1	1.16	6.1	17 7.8	23 36.2	-7 24.0	-0.5208	0.5697	0.0803	+5	-56
193 B. Tauri	6.2	1.18	6.3	17 4.6	6 1 35.6	-5 28.8	-0.3064	0.5709	0.0772	+17	-40
δ Tauri	3.9	+1.23	-6.7	+17 21.5	6 8.1	-1 6.0	-0.2670	0.5739	+0.0699	+20	-37
63 Tauri	5.7	1.23	7.0	16 35.7	6 21.2	-0 53.4	+0.5466	0.5740	0.0695	+73	+9
64 Tauri	4.9	1.24	6.8	17 15.8	6 38.4	-0 36.7	-0.1313	0.5742	0.0691	+27	-29
68 Tauri	4.3	1.25	6.7	17 44.9	7 14.3	-0 2.1	-0.5977	0.5746	0.0681	+1	-61
75 Tauri	5.2	1.24	7.3	16 11.1	8 32.4	+1 13.2	+1.1212	0.5754	0.0659	+90	+48
119 H <sup>1</sup> Tauri	6.2	+1.29	-7.0	+17 51.1	10 43.3	+3 19.4	-0.4760	0.5768	+0.0623	+8	-51
a Tauri (Alde.)	1.1	1.28	7.6	16 21.1	11 45.5	+4 19.3	+1.1480	0.5774	0.0605	+90	+51
302 B. Tauri	6.1	1.35	7.2	18 35.6	16 9.4	+8 33.8	-0.9310	0.5801	0.0528	-21	-72
i Tauri	5.1	1.38	7.4	18 42.4	18 19.0	+10 38.6	-0.9371	0.5814	0.0490	-22	-72
318 B. Tauri	5.7	1.38	8.2	17 1.8	20 52.7	-10 53.4	+0.9166	0.5829	0.0444	+90	+34
m Tauri	5.0	+1.45	-8.1	+18 32.4	7 1 4.1	-6 51.3	-0.4719	0.5853	+0.0367	+8	-48
111 Tauri	5.1	1.50	9.2	17 18.6	8 9.0	-0 2.3	+1.0035	0.5892	0.0232	+90	+42
115 Tauri	5.3	1.52	9.1	17 53.6	9 17.0	+1 3.2	+0.4291	0.5898	0.0210	+63	+7
117 Tauri	6.0	1.51	9.4	17 10.3	9 38.8	+1 24.2	+1.1757	0.5900	0.0203	+90	+58
119 Tauri	4.9	1.54	9.1	18 32.1	11 21.1	+3 2.6	-0.1882	0.5908	0.0170	+24	-28
120 Tauri	5.6	+1.55	-9.2	+18 29.0	11 53.5	+3 33.8	-0.1264	0.5912	+0.0159	+27	-24
130 Tauri	5.6	1.59	10.0	17 41.9	17 35.2	+9 2.5	+0.7325	0.5940	+0.0047	+90	+26
19 B. Geminorum	6.2	1.69	10.6	18 41.9	8 4 7.2	-4 49.9	-0.3481	0.5985	-0.0168	+15	-38
124 H <sup>1</sup> Orionis	5.7	1.68	10.9	17 55.6	4 30.0	-4 28.0	+0.4267	0.5986	0.0176	+63	+7
71 Orionis	5.1	1.70	10.6	19 10.9	4 38.2	-4 20.1	-0.8447	0.5987	0.0178	-15	-71
B. D. +17° 1191	6.5	+1.68	-11.1	+17 12.3	5 16.8	-3 43.0	+1.1411	0.5989	-0.0192	+90	+55
287 B. Orionis	6.2	1.69	11.2	17 21.2	6 19.9	-2 42.4	+0.9690	0.5993	0.0214	+90	+40
292 B. Orionis	6.5	1.70	11.1	17 47.9	7 17.1	-1 47.4	+0.4985	0.5997	0.0233	+69	+10
B. D. +17° 1275	6.2	1.73	11.7	16 59.5	11 10.8	+1 57.1	+1.2031	0.6010	0.0314	+90	+60
26 Geminorum	5.2	1.76	11.9	17 43.2	15 38.1	+6 14.0	+0.3086	0.6024	0.0406	+54	-2
74 B. Geminorum	6.2	+1.78	-11.9	+18 16.5	17 36.2	+8 7.4	-0.3337	0.6029	-0.0447	+16	-39
110 B. Geminorum	6.2	1.81	12.4	17 51.8	23 32.8	-10 10.0	-0.2227	0.6043	0.0570	+22	-33
41 H <sup>1</sup> Geminorum	6.0	1.80	12.7	16 47.1	23 36.7	-10 6.3	+0.8524	0.6043	0.0571	+90	+28
51 Geminorum	5.3	1.82	13.0	16 17.3	9 32.7	-6 0.4	+1.0819	0.6050	0.0659	+90	+45
λ Geminorum	3.6	1.84	13.1	16 40.7	5 43.9	-4 13.6	+0.5672	0.6053	0.0697	+75	+10
162 B. Geminorum	5.7	+1.86	-13.4	+17 15.0	11 6.4	+0 56.1	-0.4048	0.6060	-0.0805	+12	-47
68 Geminorum	5.2	1.86	13.6	15 59.5	11 49.9	+1 37.8	+0.7854	0.6061	0.0819	+90	+22
f Geminorum	5.3	1.88	13.4	17 51.0	14 6.6	+3 49.1	-1.2494	0.6062	0.0865	-55	-73
1 Cancri	6.0	1.89	14.1	15 59.7	21 0.1	+10 26.1	-0.0544	0.6064	0.0998	+32	-27
2 B. Cancri	6.0	1.90	14.0	16 43.6	21 35.6	+11 0.2	-0.8353	0.6064	0.1009	-14	-74
5 Cancri	5.9	+1.90	-14.1	+16 40.1	22 45.8	-11 52.4	-0.8964	0.6065	-0.1031	-18	-74

## ELEMENTS OF OCCULTATIONS, 1922. 479

## FEBRUARY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, //	P	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	°	d h m	h m				'	'
30 B. Cancri	6.1	+1.90	-14.5	+14 51.4	10 23 0.1	- 8 17.0	+0.4917	0.6068	-0.1101	+68	+ 2
29 Cancri	5.9	+1.91	14.8	14 27.9	9 26.0	- 1 37.7	+0.0698	0.6058	0.1224	+39	-22
84 B. Cancri	6.4	+1.91	15.0	13 31.2	11 27.7	+ 0 19.2	+0.7470	0.6056	0.1259	+90	+15
A <sup>1</sup> Cancri	5.5	+1.92	15.1	12 57.4	15 11.4	+ 3 54.1	+0.8177	0.6051	0.1321	+90	+19
A <sup>2</sup> Cancri	5.7	+1.92	15.2	12 23.6	16 40.1	+ 5 19.2	+1.1742	0.6049	0.1345	+90	+47
60 Cancri	5.7	+1.91	-15.2	+11 55.2	20 13.4	+ 8 44.1	+1.1479	0.6043	-0.1402	+90	+43
a Cancri	4.3	+1.92	15.2	12 9.4	21 13.9	+ 9 42.2	+0.7746	0.6041	0.1417	+90	+15
209 B. Cancri	6.5	+1.92	15.3	11 52.7	11 42.6	- 9 59.6	+0.3963	0.6032	0.1483	+60	- 7
222 B. Cancri	6.3	+1.91	15.3	11 49.5	4 55.3	- 6 54.5	-0.0346	0.6025	0.1529	+33	-31
ξ Leonis	5.1	+1.91	15.3	11 38.5	10 32.5	- 1 30.5	-0.7359	0.6012	0.1603	- 7	-79
h Leonis	5.2	+1.91	-15.3	+10 3.4	10 33.4	- 1 29.6	+0.8114	0.6011	-0.1603	+90	+16
o Leonis	3.8	+1.90	15.3	10 14.6	14 14.3	+ 2 2.7	+0.0266	0.6002	0.1647	+36	-29
83 B. Leonis	5.9	+1.89	15.2	9 18.0	20 23.1	+ 7 57.2	-0.0820	0.5985	0.1716	+30	-36
89 B. Leonis	6.2	+1.89	15.1	8 41.0	21 4.2	+ 8 36.8	+0.4026	0.5983	0.1723	+60	-10
π Leonis	4.9	+1.89	15.1	8 24.9	21 54.9	+ 9 25.5	+0.5183	0.5980	0.1731	+69	- 3
43 Leonis	6.3	+1.87	-14.7	+ 6 56.1	12 7 10.0	- 5 40.8	+0.3225	0.5952	-0.1814	+54	-14
155 B. Leonis	6.5	+1.87	14.7	6 5.2	7 16.4	- 5 34.6	+1.1322	0.5952	0.1814	+90	+37
48 Leonis	5.2	+1.84	14.5	7 21.1	11 58.9	- 1 2.9	-0.9668	0.5938	0.1849	-21	-88
35 Sextantis	6.1	+1.84	14.2	5 9.2	15 29.6	+ 2 19.8	+0.5292	0.5927	0.1870	+70	- 4
37 Sextantis	6.3	+1.83	14.3	6 46.8	16 37.0	+ 3 24.5	-1.2724	0.5923	0.1877	-51	-84
d Leonis	5.0	+1.82	-13.7	+ 4 2.0	22 35.5	+ 9 9.6	+0.2855	0.5905	-0.1906	+52	-18
75 Leonis	5.4	+1.79	13.0	2 26.2	13 52.3	- 8 9.2	+0.5187	0.5884	0.1929	+69	- 5
76 Leonis	6.0	+1.79	12.9	2 4.5	6 13.2	- 7 29.8	+0.7418	0.5881	0.1930	+90	+ 7
79 Leonis	5.5	+1.78	12.8	1 50.0	8 21.4	- 5 26.4	+0.5670	0.5875	0.1935	+73	- 3
83 Leonis	6.3	+1.76	12.8	3 26.1	9 30.8	- 4 19.5	-1.2306	0.5871	0.1937	-45	-87
τ Leonis	5.2	+1.76	-12.8	+ 3 16.9	9 58.8	- 3 52.6	-1.1717	0.5870	-0.1938	-38	-87
9 B. Virginis	6.2	+1.73	11.6	+ 0 6.7	18 50.7	+ 4 39.6	+0.2258	0.5845	0.1941	+48	-22
31 B. Virginis	6.4	+1.71	10.9	- 1 20.1	23 54.7	+ 9 32.4	+0.6717	0.5831	0.1936	+84	+ 3
162 B. Virginis	6.2	+1.66	9.2	4 11.2	14 11 19.1	+ 3 28.0	+1.3082	0.5803	0.1902	+84	+57
91 G. Virginis	6.5	+1.57	8.1	3 48.1	21 21.7	+ 7 10.7	-1.1454	0.5779	0.1845	-37	-90
θ Virginis	4.4	+1.52	- 7.1	- 5 7.5	15 5 23.6	-10 2.6	-1.1073	0.5764	-0.1796	-34	-90
JUPITER	-1.8	..	..	5 55.6	7 36.1	- 7 54.9	-0.6988	0.5778	0.1788	- 6	-89
m Virginis	5.2	+1.43	4.7	8 18.7	19 6.3	+ 3 10.7	-0.2902	0.5742	0.1677	+16	-52
575 B. Virginis	6.2	+1.42	4.1	9 19.2	21 32.2	+ 5 31.4	+0.3258	0.5738	0.1653	+51	-17
96 Virginis	6.5	+1.32	2.9	9 58.0	16 7 2.0	- 9 18.9	-0.5403	0.5725	0.1550	+ 1	-71
κ Virginis	4.3	+1.30	- 2.7	- 9 54.7	8 43.9	- 7 40.7	-0.8581	0.5723	-0.1530	-19	-90
2 Libræ	6.3	+1.27	1.8	11 21.5	13 19.8	- 3 14.4	-0.0721	0.5717	0.1475	+26	-39
4 G. Libræ	6.5	+1.26	1.7	11 19.0	13 53.0	- 2 42.5	-0.1968	0.5716	0.1468	+19	-46
6 B. Libræ	6.2	+1.21	0.9	11 58.5	19 18.4	+ 2 31.5	+0.3008	0.5711	0.1399	+13	-53
22 B. Libræ	6.4	+1.16	- 0.3	12 30.7	17 0 3.7	+ 7 6.7	-0.3984	0.5706	0.1335	+ 7	-60
μ Libræ	5.4	+1.17	+ 0.2	-13 49.5	0 40.2	+ 7 41.9	+0.8734	0.5705	-0.1327	+77	+16
o Libræ	6.2	+1.02	2.1	15 16.0	14 37.3	- 2 50.3	+0.6602	0.5691	0.1127	+71	+ 3
γ Libræ	4.0	+0.94	2.4	14 31.8	21 2.4	+ 3 21.4	-0.8015	0.5684	0.1030	-20	-90
190 B. Libræ	6.5	+0.89	2.8	14 47.6	18 0 32.0	+ 6 43.7	-0.8776	0.5680	0.0975	-26	-90
η Libræ	5.5	+0.90	3.0	15 25.5	0 49.1	+ 7 0.2	-0.2446	0.5680	0.0971	+11	-50
θ Libræ	4.4	+0.86	+ 3.8	-16 30.0	5 7.6	+11 9.7	+0.4805	0.5676	-0.0902	+54	- 8
49 Libræ	5.4	+0.81	3.9	16 18.2	8 2.8	-10 1.2	+0.0171	0.5672	0.0856	+24	-34
χ Ophiuchi	4.9	+0.68	5.5	18 16.7	19 53.6	+ 1 25.1	+1.2077	0.5658	0.0661	+72	+48
φ Ophiuchi	4.4	+0.64	5.0	16 26.5	21 45.6	+ 3 13.1	-0.8596	0.5656	0.0630	-28	-90
24 Scorpii	5.0	+0.59	5.6	17 35.4	19 2 24.9	+ 7 42.8	+0.0838	0.5649	0.0552	+25	-30
78 B. Ophiuchi	6.5	+0.50	+ 5.7	-16 40.9	8 55.2	-10 0.2	-1.2103	0.5639	-0.0443	-60	-90

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THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
90 B. Ophiuchi	6.5	+0.49	+6.2	-18 7.6	19 10 34.3	-8 24.6	+0.2613	0.5637	-0.0415	+34	-20
29 Ophiuchi	6.4	0.48	6.5	18 46.2	11 31.0	-7 29.8	+0.9107	0.5635	0.0399	+72	+20
125 B. Ophiuchi	6.2	0.44	6.2	17 30.3	14 25.1	-4 41.6	-0.5504	0.5630	0.0349	-12	-74
164 B. Ophiuchi	6.0	0.37	6.5	17 40.4	19 41.1	+0 23.5	-0.5315	0.5621	0.0260	-12	-72
192 B. Ophiuchi	6.3	0.35	6.8	18 22.3	21 49.1	+2 27.2	+0.1667	0.5618	-0.0224	+27	-25
305 B. Ophiuchi	6.3	+0.18	+7.3	-18 47.2	20 12 6.0	-7 44.7	+0.4687	0.5589	+0.0017	+45	-8
32 G. Sagittarii	5.7	0.11	6.9	17 9.9	17 36.3	-2 25.6	-1.2554	0.5577	0.0108	-69	-83
64 B. Sagittarii	6.1	0.07	7.4	18 41.1	21 8.2	+0 59.3	+0.4419	0.5569	0.0166	+44	-11
6 B. Scuti	5.9	0.06	7.0	17 24.0	21 56.2	+1 45.6	-0.9400	0.5567	0.0179	-38	-90
52 G. Sagittarii	6.4	0.06	7.3	18 29.4	22 3.0	+1 52.2	+0.2473	0.5566	0.0181	+31	-20
17 H <sup>1</sup> Sagittarii	6.4	+0.05	+7.4	-18 38.9	22 37.5	+2 25.6	+0.4298	0.5565	+0.0191	+43	-10
Y Sagit. (var.)	5.4	+0.04	7.4	18 53.6	23 51.3	+3 36.9	+0.7212	0.5562	0.0211	+70	+7
85 B. Sagittarii	6.0	0.00	7.1	17 50.8	21 25.3	+6 34.9	-0.3454	0.5555	0.0261	-1	-57
95 B. Sagittarii	5.7	0.00	7.4	18 46.6	3 57.4	+7 35.0	+0.6955	0.5552	0.0277	+68	+6
100 B. Sagittarii	5.0	-0.01	7.3	18 27.3	4 32.5	+8 8.8	+0.3615	0.5551	0.0286	+40	-14
Q Sagittarii	4.0	-0.25	+6.9	-17 59.6	22 416.4	+7 6.4	+0.9797	0.5487	0.0651	+72	+25
v Sagittarii	4.4	0.24	6.4	16 6.1	4 19.6	+7 9.4	-1.0949	0.5486	0.0651	-45	-90
54 Sagittarii	5.4	0.32	6.2	16 28.3	13 27.5	-8 0.2	-0.0345	0.5460	0.0781	+21	-37
e Sagittarii	5.2	0.33	6.2	16 18.4	14 19.8	-7 9.5	-0.1480	0.5458	0.0793	+15	-44
283 B. Sagittarii	5.5	0.33	6.0	15 39.0	14 50.4	-6 39.9	-0.8298	0.5456	0.0800	-24	-90
g Sagittarii	5.1	-0.38	+5.7	-15 41.9	21 50.8	+0 7.3	-0.1847	0.5435	+0.0894	+14	-46
16 B. Capricorni	6.2	0.46	5.2	15 1.8	23 9 4.8	+11 0.3	+0.1630	0.5402	0.1035	+35	-25
$\beta$ Capricorni	3.2	0.46	5.2	15 1.6	9 11.8	+11 7.1	+0.1717	0.5402	0.1037	+36	-25
27 G. Capricorni	6.2	0.49	5.0	15 19.0	14 11.6	-8 2.4	+1.0257	0.5387	0.1066	+75	+28
45 B. Capricorni	6.1	0.49	4.7	13 59.3	15 45.8	-6 31.0	-0.2707	0.5382	0.1114	+12	-51
84 B. Capricorni	6.0	-0.52	+4.0	-12 50.0	24 0 3.0	+1 30.9	-0.5905	0.5359	+0.1205	-5	-76
NEW MOON.											
98 B. Piscium	6.3	-0.38	-3.1	+1 15.3	28 12 41.1	+10 59.5	+0.8053	0.5224	+0.1717	+90	+11
44 Piscium	6.0	-0.36	-3.4	+1 30.4	16 42.9	-9 5.7	+1.2158	0.5229	+0.1710	+90	+44

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147 B. Piscium	5.9	-0.26	-3.8	+4 52.7	1 4 46.1	+2 36.6	-0.4680	0.5247	+0.1680	+9	-64
171 B. Piscium	6.3	0.22	3.8	6 3.7	10 47.0	+8 27.0	-0.7080	0.5258	0.1659	-8	-84
73 Piscium	6.2	-0.21	-4.2	+5 14.2	13 25.1	+11 0.5	+0.5762	0.5264	+0.1648	+74	-2
e Piscium	5.6	0.20	4.3	5 14.2	15 14.8	-11 13.0	+0.8776	0.5268	0.1640	+90	+17
$\zeta$ Piscium	5.6	0.16	4.1	7 9.7	18 0.0	-8 32.7	-0.7929	0.5275	0.1627	-10	-83
88 Piscium	6.2	0.17	4.2	6 34.9	18 30.9	-8 2.7	-0.0704	0.5276	0.1625	+30	-37
203 B. Piscium	6.4	0.11	4.5	7 33.4	2 1 33.3	-1 12.7	-0.0106	0.5295	0.1588	+34	-33
o Piscium	4.5	-0.03	-4.8	+8 45.9	10 14.7	+7 13.1	+0.0219	0.5320	+0.1535	+36	-31
$\xi$ Arietis	5.5	+0.14	5.8	10 15.4	3 59.8	+2 22.1	+1.2744	0.5392	0.1380	+89	+58
31 Arietis	5.7	0.21	5.7	12 6.5	11 46.5	+7 57.9	+0.0419	0.5417	0.1326	+37	-27
38 Arietis	5.2	0.24	6.0	12 7.0	15 50.6	+11 54.4	+0.5636	0.5434	0.1285	+74	+2
147 B. Arietis	5.8	0.34	6.5	12 53.1	4 2 9.9	-2 5.9	+0.9986	0.5481	0.1173	+90	+31
30 B. Tauri	6.4	+0.51	-6.8	+15 10.4	16 55.7	-11 49.0	+0.1338	0.5553	+0.0990	+43	-18
33 B. Tauri	6.3	0.53	6.5	16 16.9	17 40.3	-11 5.9	-0.9801	0.5556	0.0980	-24	-74
148 B. Tauri	5.9	0.60	6.7	17 5.6	23 59.7	-4 59.2	-1.2519	0.5588	0.0893	-55	-73
162 B. Tauri	6.3	0.64	7.0	17 4.5	5 3 24.4	-1 41.4	-0.9337	0.5605	0.0844	-21	-73
180 B. Tauri	6.1	0.68	7.2	17 7.8	6 45.4	+1 32.8	-0.7163	0.5622	0.0795	-7	-73
193 B. Tauri	6.2	+0.70	-7.3	+17 4.6	8 48.2	+3 31.3	-0.4982	0.5633	+0.0764	+6	-54

# ELEMENTS OF OCCULTATIONS, 1922. 481

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THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922-0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	<i>Y</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
$\delta$ Tauri	3.9	+0.75	-7.6	+17 21.5	5 13 28.7	+ 8 2.3	-0.4565	0.5656	+0.0691	+ 9	-50
63 Tauri	5.7	0.75	7.9	16 35.6	13 42.3	+ 8 15.4	+0.3688	0.5658	0.0688	+58	-2
64 Tauri	4.9	0.76	7.7	17 15.7	13 59.9	+ 8 32.4	-0.3188	0.5659	0.0684	+16	-41
68 Tauri	4.3	0.77	7.6	17 44.9	14 36.9	+ 9 8.1	-0.7915	0.5662	0.0674	-12	-73
75 Tauri	5.2	0.76	8.2	16 11.0	15 57.4	+10 25.8	+0.9529	0.5669	0.0653	+90	+34
264 B. Tauri	4.8	+0.78	-8.3	+16 1.4	16 53.9	+11 20.4	+1.1834	0.5674	+0.0637	+90	+54
119 H <sup>1</sup> . Tauri	6.2	0.80	7.8	17 51.1	18 12.3	-11 23.9	-0.6668	0.5681	0.0616	- 4	-67
275 B. Tauri	6.5	0.79	8.4	16 9.5	18 16.0	-11 20.4	+1.1252	0.5681	0.0615	+90	+48
<i>a</i> Tauri ( <i>Ald.</i> )	1.1	0.80	8.4	16 21.1	19 16.5	-10 22.0	+0.9820	0.5686	0.0599	+90	+36
302 B. Tauri	6.1	0.87	7.9	18 35.6	23 48.9	- 5 59.1	-1.1260	0.5709	0.0524	-38	-72
<i>i</i> Tauri	5.1	+0.90	-8.0	+18 42.4	6 2 2.8	- 3 49.9	-1.1311	0.5719	+0.0487	-39	-72
318 B. Tauri	5.7	0.91	8.8	17 1.8	4 41.6	- 1 16.7	+0.7531	0.5732	0.0441	+90	+23
<i>m</i> Tauri	5.0	0.98	8.6	18 32.4	9 1.7	+ 2 54.0	-0.6545	0.5752	0.0366	- 3	-64
111 Tauri	5.1	1.05	9.6	17 18.6	16 21.6	+ 9 58.1	+0.8499	0.5786	0.0235	+90	+31
115 Tauri	5.3	1.06	9.4	17 53.6	17 32.1	+11 6.1	+0.2670	0.5791	0.0213	+51	- 3
117 Tauri	6.0	+1.06	-9.7	+17 10.3	17 54.7	+11 27.8	+1.0261	0.5794	+0.0206	+90	+44
119 Tauri	4.9	1.09	9.4	18 32.1	19 40.6	-10 50.2	-0.3587	0.5801	0.0174	+14	-39
167 H <sup>1</sup> . Tauri	5.5	1.08	9.9	16 59.9	19 42.6	-10 48.2	+1.2399	0.5801	0.0173	+88	+66
120 Tauri	5.6	1.10	9.4	18 29.0	20 14.2	-10 17.8	-0.2955	0.5803	0.0163	+18	-34
130 Tauri	5.6	1.15	10.2	17 41.9	7 2 8.4	- 4 36.4	+0.5826	0.5828	+0.0053	+77	+16
19 B. Geminorum	6.2	+1.28	-10.6	+18 41.9	13 4.1	+ 5 54.9	-0.5061	0.5870	-0.0156	+ 6	-49
124 H <sup>1</sup> . Orionis	5.7	1.27	10.9	17 55.6	13 27.8	+ 6 17.8	-0.2820	0.5871	0.0163	+52	- 1
71 Orionis	5.1	1.28	10.5	19 10.9	13 36.2	+ 6 25.8	-1.0104	0.5872	0.0166	-28	-71
B. D. +17° 1191	6.5	1.28	11.2	17 12.3	14 16.3	+ 7 4.4	+1.0091	0.5874	0.0179	+90	+43
287 B. Orionis	6.2	1.29	11.2	17 21.2	15 21.8	+ 8 7.5	+0.8352	0.5878	0.0200	+90	+30
292 B. Orionis	6.5	+1.30	-11.1	+17 47.9	16 21.2	+ 9 4.7	+0.3578	0.5881	-0.0219	+57	+ 2
B. D. +17° 1275	6.2	1.34	11.6	16 59.5	20 23.6	-11 2.0	+1.0782	0.5894	0.0298	+90	+47
26 Geminorum	5.2	1.39	11.7	17 43.2	8 1 0.8	- 6 35.3	+0.1737	0.5908	0.0388	+45	- 9
74 B. Geminorum	6.2	1.42	11.6	18 16.6	3 3.2	- 4 37.6	-0.4768	0.5914	0.0428	+ 7	-49
110 B. Geminorum	6.2	1.47	12.1	17 51.8	9 12.8	+ 1 18.0	-0.3568	0.5930	0.0548	+14	-42
41 H <sup>1</sup> . Geminorum	6.0	+1.47	-12.5	+16 47.1	9 16.9	+ 1 21.9	+0.7354	0.5930	-0.0549	+90	+21
51 Geminorum	5.3	1.51	12.9	16 17.3	13 42.0	+ 5 37.0	+0.9736	0.5939	0.0635	+90	+36
$\lambda$ Geminorum	3.6	1.52	12.9	16 40.7	15 37.1	+ 7 27.7	+0.4530	0.5943	0.0672	+65	+ 3
162 B. Geminorum	5.7	1.58	13.0	17 15.0	21 10.7	-11 11.5	-0.5267	0.5953	0.0778	+ 5	-56
68 Geminorum	5.2	1.58	13.4	15 59.5	21 55.6	-10 28.4	+0.6821	0.5954	0.0792	+90	+15
1 Cancri	6.0	+1.66	-13.8	+15 59.8	9 7 23.5	- 1 22.3	-0.1575	0.5966	-0.0968	+26	-33
2 B. Cancri	6.0	1.67	13.6	16 43.6	8 0.2	- 0 47.0	-0.9482	0.5967	0.0979	-22	-74
5 Cancri	5.9	1.68	13.7	16 40.1	9 12.4	+ 0 22.5	-1.0083	0.5968	0.1001	-26	-74
30 B. Cancri	6.1	1.70	14.3	14 51.4	13 3.4	+ 4 4.5	+0.4035	0.5971	0.1070	+61	- 3
29 Cancri	5.9	1.75	14.6	14 28.0	20 10.9	+10 55.5	-0.0136	0.5974	0.1193	+34	-27
84 B. Cancri	6.4	+1.76	-15.0	+13 31.2	22 15.7	-11 4.5	+0.6743	0.5975	-0.1227	+88	+11
<i>A</i> <sup>1</sup> Cancri	5.5	1.78	15.2	12 57.4	10 2 5.0	- 7 24.1	+0.7511	0.5975	0.1289	+90	+14
<i>A</i> <sup>2</sup> Cancri	5.7	1.79	15.3	12 23.6	3 35.7	- 5 56.9	+1.1133	0.5974	0.1313	+90	+41
60 Cancri	5.7	1.82	15.5	11 55.2	7 13.7	- 2 27.3	+1.0914	0.5974	0.1370	+90	+38
<i>a</i> Cancri	4.3	1.82	15.4	12 9.4	8 15.6	- 1 27.8	+0.7158	0.5973	0.1386	+90	+11
209 B. Cancri	6.5	+1.85	-15.5	+11 52.7	12 49.6	+ 2 55.6	+0.3408	0.5972	-0.1453	+56	-10
222 B. Cancri	6.3	1.87	15.5	11 49.5	16 5.9	+ 6 4.3	-0.0886	0.5970	0.1499	+29	-35
$\xi$ Leonis	5.1	1.90	15.6	11 38.5	21 48.4	+11 33.7	-0.7854	0.5966	0.1574	-10	-79
<i>h</i> Leonis	5.2	1.90	15.8	10 3.4	21 49.3	+11 34.6	+0.7722	0.5966	0.1575	+90	+12
<i>o</i> Leonis	3.8	1.91	15.8	10 14.6	11 1 33.2	- 8 50.0	-0.0088	0.5963	0.1620	+34	-31
83 B. Leonis	5.9	+ 94	-15.8	+ 9 17.9	7 46.1	- 2 51.4	-0.1108	0.5956	-0.1691	+28	-38

## 482 ELEMENTS OF OCCULTATIONS, 1922.

## MARCH.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	$\gamma$	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
89 B. Leonis	6.2	+1.94	-15.9	+ 8 41.0	11 8 27.5	- 2 11.6	+0.3769	0.5956	-0.1698	+58	-11
$\pi$ Leonis	4.9	1.95	15.9	8 24.9	9 18.6	- 1 22.5	+0.4944	0.5955	0.1707	+67	- 5
43 Leonis	6.3	1.98	15.8	6 56.1	18 37.0	+ 7 34.6	+0.3123	0.5944	0.1795	+53	-16
155 B. Leonis	6.5	1.98	15.9	6 5.2	18 43.5	+ 7 40.9	+1.1237	0.5944	0.1796	+90	+36
48 Leonis	5.2	1.99	15.6	7 21.1	23 26.6	-11 46.8	-0.9704	0.5938	0.1832	-22	-83
35 Sextantis	6.1	+2.01	-15.6	+ 5 9.2	12 2 57.1	- 8 24.3	+0.5318	0.5934	-0.1856	+70	- 4
37 Sextantis	6.3	2.00	15.5	6 46.8	4 4.4	- 7 19.6	-1.2674	0.5932	0.1863	-50	-84
$\delta$ Leonis	5.0	2.03	15.3	4 1.9	10 1.7	- 1 35.9	+0.2991	0.5924	0.1896	+52	-17
75 Leonis	5.4	2.05	15.0	2 26.1	16 55.5	+ 5 2.4	10.5419	0.5915	0.1924	+70	- 4
76 Leonis	6.0	2.05	15.0	2 4.5	17 36.0	+ 5 41.4	+0.7651	0.5914	0.1926	+90	+ 9
79 Leonis	5.5	+2.05	-14.8	+ 1 49.9	19 43.0	+ 7 43.5	+0.5939	0.5911	-0.1932	+75	- 2
83 Leonis	6.3	2.03	14.6	3 26.1	20 51.6	+ 8 49.6	-1.1941	0.5910	0.1934	-41	-87
$\tau$ Leonis	5.2	2.04	14.6	3 16.9	21 19.4	+ 9 16.3	-1.1346	0.5910	0.1935	-35	-87
9 B. Virginis	6.2	2.06	14.0	+ 0 6.7	13 6 4.2	- 6 18.5	+0.2693	0.5898	0.1945	+50	-20
31 B. Virginis	6.4	2.08	13.5	- 1 20.2	11 3.1	- 1 30.8	+0.7188	0.5892	0.1942	+89	+ 6
91 G. Virginis	6.5	+2.05	-11.0	- 3 48.2	14 8 59.8	- 4 23.0	-1.0512	0.5868	-0.1862	-29	-90
JUPITER	-2.0	..	..	5 2.2	14 42.6	+ 1 7.0	-0.8893	0.5907	0.1843	-17	-90
$\theta$ Virginis	4.4	2.04	10.1	5 7.5	15 50.0	+ 2 11.9	-1.0046	0.5861	0.1816	-26	-90
m Virginis	5.2	2.01	8.0	8 18.7	15 5.7	- 9 0.0	-0.1841	0.5848	0.1699	+22	-45
575 B. Virginis	6.2	2.02	7.5	9 19.3	7 28.7	- 6 44.0	+0.4250	0.5845	0.1675	+58	-11
623 B. Virginis	6.5	+1.96	- 6.7	- 8 53.1	14 42.4	+ 0 13.7	-1.1950	0.5838	-0.1595	-45	-90
95 Virginis	5.4	1.95	6.5	8 56.6	15 42.2	+ 1 11.4	-1.2957	0.5838	0.1584	-61	-85
96 Virginis	6.5	1.96	6.2	9 58.0	16 39.7	+ 2 6.6	-0.4205	0.5836	0.1572	+ 8	-61
$\kappa$ Virginis	4.3	1.95	6.0	9 54.8	18 18.1	+ 3 41.5	-0.7320	0.5835	0.1553	-10	-90
2 Libræ	6.3	1.94	5.1	11 21.6	22 44.6	+ 7 58.1	+0.0449	0.5829	0.1497	+33	-32
4 G. Libræ	6.5	+1.94	- 5.0	-11 19.1	23 16.6	+ 8 29.1	-0.0775	0.5829	-0.1490	+26	-39
6 B. Libræ	6.2	1.89	4.1	11 58.5	16 4 30.8	-10 28.2	-0.1705	0.5824	0.1420	+19	-45
22 B. Libræ	6.4	1.87	3.5	12 30.8	9 6.2	- 6 2.8	-0.2700	0.5818	0.1356	+12	-51
$\mu$ Libræ	5.4	1.89	3.1	13 49.5	9 41.4	- 5 28.9	+0.0816	0.5817	0.1348	+77	+23
0 Libræ	6.2	1.78	0.9	15 16.1	23 9.7	+ 7 30.0	+0.7777	0.5799	0.1145	+75	+ 9
$\gamma$ Libræ	4.0	+1.71	- 0.4	-14 31.8	17 5 22.0	-10 31.2	-0.6588	0.5789	-0.1046	-11	-85
190 B. Libræ	6.5	1.68	+0.1	14 47.6	8 44.7	- 7 15.9	-0.7331	0.5783	0.0901	-16	-90
$\eta$ Libræ	5.5	1.68	0.3	15 25.5	9 1.3	- 6 59.8	-0.1099	0.5783	0.0986	+19	-41
$\theta$ Libræ	4.4	1.65	1.2	16 30.1	13 11.4	- 2 58.7	+0.6046	0.5774	0.0917	+64	0
49 Libræ	5.4	1.61	1.4	16 18.2	16 1.1	- 0 15.2	+0.1489	0.5770	0.0869	+32	-26
$\varphi$ Ophiuchi	4.4	+1.46	+ 2.9	-16 26.6	18 5 19.2	-11 25.5	-0.7143	0.5741	-0.0640	-18	-90
24 Scorpii	5.0	1.42	3.7	17 35.5	9 50.8	- 7 3.6	+0.2155	0.5730	0.0561	+33	-22
78 B. Ophiuchi	6.5	1.33	4.0	16 40.9	16 10.7	- 0 57.0	-1.0619	0.5714	0.0450	-44	-90
90 B. Ophiuchi	6.5	1.32	4.6	18 7.6	17 47.3	+ 0 36.1	+0.3900	0.5710	0.0421	+43	-12
29 Ophiuchi	6.4	1.32	5.0	18 46.2	18 42.7	+ 1 29.6	+1.0310	0.5707	0.0405	+72	+30
125 B. Ophiuchi	6.2	+1.27	+ 4.8	-17 30.3	21 32.5	+ 4 13.4	-0.4116	0.5699	-0.0356	- 4	-61
164 B. Ophiuchi	6.0	1.20	5.2	17 40.5	2 41.1	+ 9 11.1	-0.3943	0.5685	0.0265	- 4	-60
192 B. Ophiuchi	6.3	1.18	5.7	18 22.4	4 46.3	+11 12.0	+0.2951	0.5678	-0.0229	+35	-17
305 B. Ophiuchi	6.3	1.00	6.7	18 47.2	18 46.5	+ 0 43.3	+0.5905	0.5634	+0.0013	+55	- 1
6 Sagittarii	6.5	0.96	6.3	17 9.2	21 16.2	+ 3 7.8	-1.1525	0.5626	0.0055	-56	-90
32 G. Sagittarii	5.7	+0.92	+ 6.4	-17 9.9	20 0 11.2	+ 5 56.8	-1.1186	0.5616	+0.0105	-53	-90
64 B. Sagittarii	6.1	0.88	7.2	18 41.1	3 40.0	+ 9 18.5	+0.5613	0.5604	0.0163	+54	- 2
6 B. Scuti	5.9	0.86	6.7	17 24.0	4 27.2	+10 4.1	-0.8084	0.5601	0.0176	-28	-90
52 G. Sagittarii	6.4	0.87	7.1	18 29.4	4 34.0	+10 10.8	+0.3682	0.5601	0.0178	+39	-13
17 H <sup>1</sup> Sagittarii	6.4	0.86	7.2	18 38.9	5 7.9	+10 43.4	+0.5488	0.5598	0.0187	+53	- 3
$\gamma$ Sagit. (var.)	5.4	+0.85	+ 7.4	-18 53.6	6 20.7	+11 53.8	+0.8371	0.5594	+0.0207	+72	+15



# ELEMENTS OF OCCULTATIONS, 1922. 483

MARCH.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	F	$x'$	$y'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
85 B. Sagittarii	6.0	+0.80	+7.1	-17 50.8	20 9 22.2	- 9 10.8	-0.2214	0.5584	+0.0257	+ 5	-48
95 B. Sagittarii	5.7	0.80	7.4	18 46.6	10 23.6	- 8 11.4	+0.8102	0.5580	0.0273	+72	+13
100 B. Sagittarii	5.0	0.78	7.4	18 27.3	10 58.2	- 7 38.1	+0.4789	0.5578	0.0283	+49	- 7
155 B. Sagittarii	5.5	0.63	7.0	16 28.2	22 10.4	+ 3 11.9	-1.2562	0.5537	0.0460	-66	-85
q Sagittarii	4.0	0.48	7.7	17 59.6	21 10 29.2	- 8 53.4	+1.0827	0.5492	0.0645	+73	+34
v Sagittarii	4.4	+0.48	+7.1	-16 6.0	10 32.4	- 8 50.3	-0.9805	0.5491	+0.0645	-36	-90
54 Sagittarii	5.4	0.38	7.2	16 28.3	19 37.5	- 0 2.7	+0.0686	0.5459	0.0774	+27	-31
e Sagittarii	5.2	0.37	7.2	16 18.4	20 29.6	+ 0 47.8	-0.0449	0.5456	0.0786	+21	-37
283 B. Sagittarii	5.5	0.36	6.9	15 39.0	21 0.1	+ 1 17.4	-0.7241	0.5454	0.0793	-17	-90
g Sagittarii	5.1	0.28	6.9	15 41.8	22 3 59.3	+ 8 3.3	-0.0865	0.5429	0.0886	+20	-40
16 B. Capricorni	6.2	+0.16	+6.5	-15 1.8	15 12.6	- 5 4.5	+0.2524	0.5390	+0.1026	+41	-20
$\beta$ Capricorni	3.2	0.16	6.5	15 1.6	15 19.6	- 4 57.7	+0.2610	0.5389	0.1027	+41	-20
27 G. Capricorni	6.2	0.11	6.5	15 19.0	20 19.4	- 0 7.3	+1.1093	0.5373	0.1085	+75	+35
45 B. Capricorni	6.1	0.10	6.0	13 59.3	21 53.6	+ 1 24.1	-0.1851	0.5369	0.1103	+17	-46
84 B. Capricorni	6.0	+0.03	5.5	12 50.0	23 6 11.2	+ 9 26.6	-0.5105	0.5343	0.1194	0	-69
p Aquarii	4.5	-0.04	+4.8	-11 41.2	15 47.3	- 5 14.6	-0.5875	0.5316	+0.1290	- 3	-76
51 G. Aquarii	6.5	0.06	4.5	10 55.6	18 11.5	- 2 54.8	-1.1169	0.5309	0.1313	-39	-90
19 Aquarii	5.6	0.10	4.0	10 4.8	23 48.7	+ 2 32.4	-1.3055	0.5295	0.1363	-66	-80
72 B. Aquarii	6.5	0.12	4.5	11 54.3	24 1 20.6	+ 4 1.4	+0.9298	0.5291	0.1376	+79	+20
137 B. Capricorni	6.2	0.16	4.0	10 55.6	7 9.6	+ 9 40.2	+0.6591	0.5278	0.1425	+76	+ 3
c <sup>1</sup> Capricorni	5.3	-0.16	+3.5	- 9 26.4	10 2.7	-11 31.7	-0.5781	0.5272	+0.1447	- 1	-75
c <sup>2</sup> Capricorni	6.3	0.17	3.5	9 38.1	10 42.1	-10 53.5	-0.2660	0.5271	0.1452	+16	-50
$\theta$ Aquarii	4.3	0.25	2.3	8 10.3	25 2 41.4	+ 4 37.7	+0.5188	0.5243	0.1561	+66	- 6
q Aquarii	5.3	0.27	2.2	8 12.8	4 27.8	+ 6 21.0	+0.8426	0.5241	0.1572	+82	+13
170 B. Aquarii	6.0	0.27	2.0	7 35.3	6 13.6	+ 8 3.8	+0.4264	0.5239	0.1581	+59	-11
186 B. Aquarii	6.1	-0.28	+1.6	- 6 57.2	10 19.3	-11 57.6	+0.3721	0.5234	+0.1603	+56	-14
252 B. Aquarii	5.8	0.33	0.6	5 24.2	22 58.4	+ 0 19.7	+0.7137	0.5223	0.1659	+85	+ 5
197 G. Aquarii	6.3	0.33	+0.5	- 5 13.6	26 0 5.5	+ 1 24.9	+0.7037	0.5223	0.1663	+84	+ 5
NEW MOON.											
$\xi$ Arietis	5.5	-0.13	-6.7	+10 15.4	30 11 40.2	+ 9 49.9	+1.2378	0.5420	+0.1384	+90	+52
31 Arietis	5.7	0.09	6.8	12 6.5	17 25.4	- 8 35.7	+0.0037	0.5442	0.1329	+35	-29
38 Arietis	5.2	-0.07	7.0	12 7.0	21 28.6	- 4 40.3	+0.5249	0.5458	0.1288	+70	0
147 B. Arietis	5.8	0.00	7.5	12 53.1	31 7 46.4	+ 5 17.9	+0.9592	0.5499	0.1175	+90	+28
30 B. Tauri	6.4	+0.11	7.9	15 10.4	22 32.6	- 4 24.8	+0.0910	0.5559	0.0990	+40	-20
33 B. Tauri	6.3	+0.12	-7.6	+16 16.9	23 17.3	- 3 41.6	-1.0260	0.5563	+0.0980	-29	-74

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162 B. Tauri	6.3	+0.20	- 8.0	+17 4.5	1 9 3.7	+ 5 45.2	-0.9821	0.5603	+0.0843	-25	-73
180 B. Tauri	6.1	+0.23	- 8.2	+17 7.8	12 26.0	+ 9 0.7	-0.7642	0.5616	+0.0793	-10	-73
193 B. Tauri	6.2	0.24	8.3	17 4.5	14 29.6	+11 0.2	-0.5450	0.5623	0.0762	+ 4	-58
$\delta$ Tauri	3.9	0.29	8.5	17 21.5	19 12.3	- 8 26.7	-0.5036	0.5643	0.0690	+ 6	-54
63 Tauri	5.7	0.28	8.7	16 35.6	19 26.0	- 8 13.5	+0.3269	0.5644	0.0686	+55	- 4
64 Tauri	4.9	0.29	8.5	17 15.7	19 43.9	- 7 56.3	-0.3648	0.5645	0.0682	+15	-44
68 Tauri	4.3	+0.30	- 8.4	+17 44.9	20 21.1	- 7 20.4	-0.8407	0.5648	+0.0672	-15	-73
75 Tauri	5.2	0.30	9.0	16 11.0	21 42.4	- 6 1.8	+0.9151	0.5653	0.0650	+90	+31
264 B. Tauri	4.8	0.31	9.1	16 1.4	22 39.5	- 5 6.7	+1.1472	0.5657	0.0635	+90	+50
119 H <sup>1</sup> Tauri	6.2	0.33	8.6	17 51.0	23 58.7	- 3 50.2	-0.7154	0.5661	0.0614	- 7	-72
275 B. Tauri	6.5	0.32	9.1	16 9.5	2 0 2.4	+ 3 46.6	+1.0889	0.5662	0.0613	+90	+45
a Tauri (Ald.)	1.1	+0.33	- 9.2	+16 21.1	1 3.5	- 2 47.5	+0.9449	0.5666	+0.0597	+90	+34

## 484 ELEMENTS OF OCCULTATIONS, 1922.

APRIL.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	$\gamma$	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
302 B. Tauri	6.1	+0.38	-8.7	+18 35.5	2 539.1	+1 38.5	-1.1785	0.5683	+0.0522	-45	-72
i Tauri	5.1	0.40	8.8	18 42.4	7 54.7	+3 49.4	-1.1837	0.5691	0.0484	-45	-72
318 B. Tauri	5.7	0.42	9.4	17 1.8	10 35.7	+6 24.7	+0.7158	0.5701	0.0439	+90	+20
m Tauri	5.0	0.48	9.2	18 32.3	14 59.6	+10 39.6	-0.7036	0.5716	0.0364	-6	-70
111 Tauri	5.1	0.54	10.0	17 18.6	22 27.1	-6 8.9	+0.8160	0.5741	0.0234	+90	+29
115 Tauri	5.3	+0.55	-9.8	+17 53.6	23 38.9	-4 59.6	+0.2274	0.5744	+0.0212	+48	-5
117 Tauri	6.0	0.55	10.1	17 10.3	3 0 1.8	-4 37.6	+0.9945	0.5745	0.0205	+90	+41
119 Tauri	4.9	0.57	9.7	18 32.1	1 49.8	-2 53.4	-0.4046	0.5751	0.0173	+11	-42
167 H <sup>1</sup> Tauri	5.5	0.56	10.2	16 59.9	1 51.8	-2 51.5	+1.2108	0.5751	0.0173	+90	+62
120 Tauri	5.6	0.58	9.8	18 29.0	2 24.1	-2 20.4	-0.3405	0.5753	0.0163	+15	-38
122 Tauri	5.5	+0.59	-10.4	+16 59.4	3 57.2	-0 50.6	+1.2502	0.5758	+0.0135	+86	+68
130 Tauri	5.6	0.63	10.3	17 41.9	8 25.7	+3 28.3	+0.5481	0.5770	+0.0054	+73	+14
19 B. Geminorum	6.2	0.76	10.5	18 41.9	19 37.0	-9 44.7	-0.5521	0.5798	-0.0152	+3	-53
124 H <sup>1</sup> Orionis	5.7	0.75	10.8	17 55.6	20 1.3	-9 21.2	+0.2463	0.5799	0.0160	+50	-3
71 Orionis	5.1	0.76	10.4	19 10.9	20 10.0	-9 12.9	-1.0629	0.5800	0.0162	-33	-71
B. D. +17° 1191	6.5	+0.76	-11.1	+17 12.3	20 51.0	-8 33.3	+0.9832	0.5801	-0.0175	+90	+41
287 B. Orionis	6.2	0.77	11.1	17 21.2	21 58.3	-7 28.5	+0.8074	0.5803	0.0190	+90	+28
292 B. Orionis	6.5	0.78	11.0	17 47.9	22 59.2	-6 29.8	-0.3239	0.5806	0.0215	+55	0
B. D. +17° 1275	6.2	0.82	11.4	16 59.5	4 3 8.3	-2 29.8	+1.0553	0.5814	0.0292	+90	+46
26 Geminorum	5.2	0.88	11.4	17 43.2	7 53.5	+2 5.0	+0.1392	0.5823	0.0381	+43	-11
74 B. Geminorum	6.2	+0.90	-11.3	+18 16.6	9 59.6	+4 6.5	-0.5203	0.5827	-0.0420	+5	-53
110 B. Geminorum	6.2	0.97	11.6	17 51.8	16 20.6	+10 13.5	-0.3975	0.5836	0.0537	+12	-45
41 H <sup>1</sup> Geminorum	6.0	0.96	12.0	16 47.1	16 24.8	+10 17.5	+0.7115	0.5836	0.0538	+90	+19
51 Geminorum	5.3	1.01	12.4	16 17.3	20 58.5	-9 18.9	+0.9548	0.5842	0.0622	+90	+34
$\lambda$ Geminorum	3.6	1.04	12.3	16 40.7	22 57.4	-7 24.3	+0.4266	0.5845	0.0658	+62	+2
162 B. Geminorum	5.7	+1.10	-12.3	+17 15.0	5 44.2	-1 52.1	-0.5675	0.5849	-0.0762	+2	-60
68 Geminorum	5.2	1.10	12.7	15 59.5	5 28.7	-1 7.6	+0.6612	0.5851	0.0776	+86	+14
1 Cancri	6.0	1.21	13.0	15 59.8	15 16.7	+8 18.6	-0.1866	0.5857	0.0948	+24	-35
2 B. Cancri	6.0	1.22	12.7	16 43.6	15 54.7	+8 55.2	-0.9936	0.5857	0.0959	-26	-74
5 Cancri	5.9	1.23	12.8	16 40.1	17 9.6	+10 7.3	-1.0544	0.5858	0.0980	-31	-74
30 B. Cancri	6.1	+1.27	-13.5	+14 51.4	21 9.0	-10 2.1	+0.3824	0.5859	-0.1047	+59	-4
29 Cancri	5.9	1.34	13.8	14 28.0	6 43.2	-2 55.4	-0.0398	0.5860	0.1167	+32	-29
84 B. Cancri	6.4	1.36	14.1	13 31.2	6 41.6	-0 50.8	+0.6605	0.5860	0.1201	+86	+10
A <sup>1</sup> Cancri	5.5	1.40	14.3	12 57.5	10 39.4	+2 58.3	+0.7396	0.5860	0.1262	+90	+14
A <sup>2</sup> Cancri	5.7	1.42	14.5	12 23.6	12 13.5	+4 28.8	+1.1085	0.5861	0.1286	+90	+40
60 Cancri	5.7	+1.46	-14.6	+11 55.2	15 59.6	+8 6.5	+1.0872	0.5860	-0.1341	+90	+38
$\alpha$ Cancri	4.3	1.47	14.6	12 9.4	17 3.7	+9 8.3	+0.7056	0.5860	0.1356	+90	+11
209 B. Cancri	6.5	1.51	14.6	11 52.7	21 47.8	-10 18.2	+0.3254	0.5859	0.1423	+54	-11
222 B. Cancri	6.3	1.55	14.6	11 49.5	7 11.2	-7 2.4	-0.1103	0.5858	0.1468	+28	-36
$\xi$ Leonis	5.1	1.60	14.6	11 38.5	7 5.9	-1 20.8	-0.8167	0.5857	0.1543	-12	-79
$h$ Leonis	5.2	+1.60	-15.1	+10 3.4	7 6.8	-1 19.9	+0.7661	0.5857	-0.1543	+90	+13
$\theta$ Leonis	3.8	1.64	15.0	10 14.6	10 58.5	+2 23.2	-0.0265	0.5856	0.1589	+33	-31
83 B. Leonis	5.9	1.70	15.1	9 18.0	17 24.0	+8 34.5	-0.1283	0.5854	0.1660	+27	-39
89 B. Leonis	6.2	1.71	15.3	8 41.0	18 6.8	+9 15.7	+0.3671	0.5854	0.1666	+57	-12
$\pi$ Leonis	4.9	1.71	15.3	8 24.9	18 59.6	+10 6.5	+0.4865	0.5854	0.1676	+66	-6
43 Leonis	6.3	+1.80	-15.4	+6 56.1	8 43.5	-4 38.9	+0.3039	0.5851	-0.1764	+53	-17
155 B. Leonis	6.5	1.80	15.6	6 5.2	4 42.2	-4 32.4	+1.1265	0.5851	0.1765	+90	+36
48 Leonis	5.2	1.84	15.0	7 21.1	9 33.5	+0 8.1	-0.9946	0.5850	0.1803	-24	-83
35 Sextantis	6.1	1.88	15.4	5 9.2	13 9.9	+3 36.6	+0.5280	0.5850	0.1828	+69	-5
37 Sextantis	6.3	1.88	15.0	6 46.8	14 19.0	+4 43.1	-1.2936	0.5850	0.1835	-55	-84
d Leonis	5.0	+1.94	-15.2	+4 1.9	20 25.4	+10 36.0	+0.2937	0.5850	-0.1870	+52	-18

# ELEMENTS OF OCCULTATIONS, 1922. 485

APRIL.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	F	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
75 Leonis	5.4	+2.00	-15.1	+ 2 26.1	9 3 28.7	- 6 36.2	+0.5400	0.5850	-0.1900	+70	- 0
76 Leonis	6.0	2.00	15.1	2 4.4	4 10.1	- 5 56.3	+0.7656	0.5850	0.1903	+90	+ 9
79 Leonis	5.5	2.02	15.0	1 49.9	6 19.6	- 3 51.7	+0.5929	0.5850	0.1909	+75	- 2
83 Leonis	6.3	2.00	14.6	3 26.1	7 29.7	- 2 44.1	-1.2119	0.5851	0.1913	-43	-87
τ Leonis	5.2	2.02	14.6	3 16.9	7 58.0	- 2 16.9	-1.1516	0.5851	0.1914	-37	-87
9 B. Virginis	6.2	+2.09	-14.4	+ 0 6.7	16 51.9	+ 6 17.4	+0.2664	0.5853	-0.1928	+50	-20
31 B. Virginis	6.4	2.14	14.2	- 1 20.2	21 55.0	+11 9.3	+0.7194	0.5855	0.1928	+89	+ 6
91 G. Virginis	6.5	2.25	12.0	3 48.2	10 20 1.4	+ 8 26.8	-1.0544	0.5867	0.1861	-29	-90
JUPITER	-2.0	..	..	3 43.1	20 31.3	+ 8 55.6	-1.2311	0.5919	0.1879	-46	-90
θ Virginis	4.4	2.28	11.3	5 7.6	11 251.6	- 8 58.1	-1.0058	0.5871	0.1818	-26	-90
m Virginis	5.2	+2.34	- 9.5	- 8 18.8	16 5.4	+ 3 46.1	-0.1844	0.5879	-0.1708	+22	-45
575 B. Virginis	6.2	2.36	9.2	9 19.3	18 25.5	+ 6 1.1	+0.4230	0.5880	0.1685	+58	-11
623 B. Virginis	6.5	2.35	8.2	8 53.1	12 134.6	-11 5.8	-1.1906	0.5883	0.1608	-45	-90
95 Virginis	5.4	2.35	8.0	8 56.6	2 33.6	-10 9.0	-1.2905	0.5883	0.1596	-59	-87
96 Virginis	6.5	2.36	7.8	9 58.1	3 30.4	- 9 14.3	-0.4194	0.5884	0.1585	+ 8	-61
κ Virginis	4.3	+2.36	- 7.6	- 9 54.8	5 7.5	- 7 40.9	-0.7293	0.5884	-0.1566	- 9	-90
2 Libræ	6.3	2.38	6.8	11 21.6	9 30.1	- 3 28.0	+0.0433	0.5885	0.1512	+32	-32
4 G. Libræ	6.5	2.38	6.8	11 19.1	10 1.6	- 2 57.7	-0.0784	0.5885	0.1505	+26	-39
6 B. Libræ	6.2	2.36	5.8	11 58.5	15 10.7	+ 1 59.9	-0.1770	0.5886	0.1436	+20	-45
22 B. Libræ	6.4	2.37	5.2	12 30.8	19 41.1	+ 6 20.2	-0.2700	0.5885	0.1373	+14	-51
μ Libræ	5.4	+2.39	- 4.9	-13 49.6	20 15.6	+ 6 53.5	+0.9718	0.5885	-0.1365	+77	+23
o Libræ	6.2	2.36	2.6	15 16.1	13 9 26.7	- 4 24.8	+0.7666	0.5879	0.1162	+75	+ 9
γ Libræ	4.0	2.32	1.8	14 31.8	15 30.1	+ 1 25.0	-0.6564	0.5873	0.1063	-11	-86
190 B. Libræ	6.5	2.30	1.3	14 47.7	18 47.7	+ 4 35.3	-0.7301	0.5870	0.1007	-16	-90
η Libræ	5.5	2.31	1.2	15 25.5	19 3.9	+ 4 50.9	-0.1137	0.5869	0.1002	+19	-41
θ Libræ	4.4	+2.30	- 0.3	-16 30.1	23 7.6	+ 8 45.6	+0.5923	0.5864	-0.0932	+63	- 1
49 Libræ	5.4	2.26	0.0	16 18.3	14 152.8	+11 24.6	-0.1412	0.5860	0.0884	+32	-26
φ Ophiuchi	4.4	2.17	+ 2.0	16 26.6	14 49.0	- 0 7.8	-0.7138	0.5834	0.0652	-18	-90
24 Scorpii	5.0	2.15	2.9	17 35.5	19 12.9	+ 4 6.5	+0.2037	0.5824	0.0572	+33	-23
78 B. Ophiuchi	6.5	2.08	3.4	16 40.9	15 122.1	+10 2.1	-1.0589	0.5808	0.0459	-44	-90
90 B. Ophiuchi	6.5	+2.08	+ 4.0	-18 7.6	2 55.9	+11 32.6	+0.3745	0.5803	-0.0430	+42	-13
29 Ophiuchi	6.4	2.08	4.3	18 46.2	3 49.7	-11 35.6	+1.0071	0.5800	0.0414	+72	+27
125 B. Ophiuchi	6.2	2.03	4.3	17 30.3	6 34.7	- 8 56.5	-0.4179	0.5792	0.0363	- 4	-62
164 B. Ophiuchi	6.0	1.98	5.0	17 40.5	11 34.6	- 4 7.5	-0.4017	0.5776	0.0272	- 4	-61
192 B. Ophiuchi	6.3	1.97	5.4	18 22.4	13 36.3	- 2 10.2	+0.2785	0.5768	-0.0234	+34	-19
305 B. Ophiuchi	6.3	+1.81	+ 7.0	-18 47.2	16 3 13.3	+10 57.8	+0.5676	0.5717	+0.0011	+54	- 2
6 Sagittarii	6.5	1.76	6.7	17 9.2	5 39.0	-10 41.5	-1.1546	0.5707	0.0054	-57	-90
32 G. Sagittarii	5.7	1.73	7.0	17 9.9	8 29.5	- 7 57.0	-1.1219	0.5695	0.0204	-53	-90
64 B. Sagittarii	6.1	1.70	7.8	18 41.1	11 52.8	+ 4 40.8	+0.5371	0.5681	0.0163	+52	- 4
6 B. Scuti	5.9	1.68	7.4	17 24.0	12 38.9	- 3 56.3	-0.8164	0.5677	0.0176	-29	-90
52 G. Sagittarii	6.4	+1.69	+ 7.8	-18 29.4	12 45.5	- 3 49.9	+0.3461	0.5677	+0.0178	+38	-15
17 H. Sagittarii	6.4	1.68	7.9	18 38.9	13 18.5	- 3 18.1	+0.5245	0.5675	0.0188	+51	- 5
Y Sagit. (var.)	5.4	1.67	8.1	18 53.6	14 29.6	- 2 9.4	-0.8093	0.5669	0.0268	+72	+13
85 B. Sagittarii	6.0	1.62	8.0	17 50.8	17 26.5	+ 0 41.4	-0.2375	0.5656	0.0258	+ 6	-49
95 B. Sagittarii	5.7	1.62	8.3	18 46.6	18 26.4	+ 1 39.2	+0.7821	0.5652	0.0275	+72	+11
100 B. Sagittarii	5.0	+1.61	+ 8.3	-18 27.3	19 0.2	+ 2 11.8	+0.4544	0.5650	+0.0284	+47	- 9
155 B. Sagittarii	5.5	1.45	8.3	16 28.2	17 556.9	-11 13.8	-1.2639	0.5600	0.0463	-68	-83
g Sagittarii	4.0	1.30	9.5	17 59.6	18 0.7	+ 0 25.8	+1.0488	0.5543	0.0649	+73	+31
v Sagittarii	4.4	1.29	8.8	16 6.0	18 3.8	+ 0 28.8	-0.9944	0.5543	0.0650	-36	-90
54 Sagittarii	5.4	1.18	9.2	16 28.2	18 259.3	+ 9 6.8	+0.0431	0.5500	0.0779	+26	-32
e Sagittarii	5.2	+1.17	+ 9.2	-16 18.3	3 50.6	+ 9 56.4	-0.0694	0.5497	+0.0790	+19	-39

## 486 ELEMENTS OF OCCULTATIONS, 1922.

APRIL.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922-0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
283 B. Sagittarii	5.5	+1.16	+ 9.0	-15 39.0	18 4 20.6	+10 25.5	-0.7428	0.5494	+0.0797	-18	-90
g Sagittarii	5.1	1.07	9.2	15 41.8	11 13.4	-6 55.1	-0.1118	0.5463	0.0890	+18	-41
16 B. Capricorni	6.2	0.93	9.1	15 1.8	22 17.9	+3 48.5	+0.2232	0.5414	0.1029	+39	-22
$\beta$ Capricorni	3.2	0.93	9.1	15 1.6	22 24.8	+3 55.2	+0.2317	0.5414	0.1031	+40	-22
27 G. Capricorni	6.2	0.87	9.2	15 18.9	19 3 21.3	+8 42.4	+1.0741	0.5393	0.1089	+75	+32
45 B. Capricorni	6.1	+0.85	+ 8.8	-13 59.3	4 54.6	+10 12.7	-0.2119	0.5387	+0.1107	+15	-47
84 B. Capricorni	6.0	0.76	8.3	12 49.9	13 7.8	-5 49.2	-0.5363	0.5354	0.1196	-1	-71
v Aquarii	4.5	0.65	7.8	11 41.2	22 39.9	+3 25.4	-0.6137	0.5320	0.1291	-5	-78
51 G. Aquarii	6.5	0.63	7.4	10 55.6	20 1 3.4	+5 44.7	-1.1407	0.5312	0.1314	-42	-90
72 B. Aquarii	6.5	0.55	7.6	11 54.3	8 10.4	-11 21.1	+0.8968	0.5289	0.1376	+79	+17
137 B. Capricorni	6.2	+0.49	+ 7.1	-10 55.6	13 58.2	-5 43.5	+0.6276	0.5273	+0.1424	+73	0
c <sup>1</sup> Capricorni	5.3	0.47	6.5	9 26.4	16 50.9	-2 56.0	-0.6049	0.5266	0.1446	-2	-77
c <sup>2</sup> Capricorni	6.3	0.46	6.5	9 38.1	17 30.2	-2 17.8	-0.2938	0.5264	0.1451	+15	-52
0 Aquarii	4.3	0.32	5.4	8 10.2	21 9 28.2	-10 47.8	+0.4900	0.5231	0.1559	+64	-7
q Aquarii	5.3	0.30	5.3	8 12.7	11 14.7	-9 4.5	+0.8133	0.5228	0.1569	+82	+11
170 B. Aquarii	6.0	+0.29	+ 5.1	-7 35.3	13 0.5	-7 21.8	+0.3984	0.5225	+0.1578	+57	-13
186 B. Aquarii	6.1	0.27	4.6	6 57.2	17 6.1	-3 23.2	+0.3449	0.5220	0.1600	+54	-15
252 B. Aquarii	5.8	0.17	3.5	5 24.2	22 545.6	+8 54.4	+0.6884	0.5208	0.1657	+83	+4
197 G. Aquarii	6.3	0.17	3.4	5 13.6	6 52.8	+9 59.6	+0.6788	0.5208	0.1661	+83	+3
263 B. Aquarii	6.1	0.15	3.3	5 7.8	9 8.0	-11 49.0	+0.9470	0.5207	0.1670	+85	+20
293 B. Aquarii	5.5	+0.11	+ 2.5	-3 55.3	16 36.1	-4 33.8	+0.8613	0.5206	+0.1692	+87	+14
13 Piscium	6.4	0.07	1.4	1 31.0	23 1 19.0	+3 54.2	-0.3198	0.5211	0.1711	+17	-54
14 Piscium	5.9	0.06	1.3	-1 40.7	2 28.6	+5 1.9	+0.0576	0.5212	0.1712	+38	-31
21 Piscium	5.6	0.04	0.3	+0 38.6	10 36.4	-11 4.5	-1.1137	0.5218	0.1722	-33	-90
60 B. Piscium	6.0	+0.01	+ 0.3	-0 19.5	13 25.4	-8 20.2	+0.4416	0.5221	0.1723	+63	-10
98 B. Piscium	6.3	-0.04	- 0.8	+1 15.3	24 1 33.8	+3 27.2	+0.7877	0.5240	+0.1720	+90	+10
44 Piscium	6.0	-0.06	1.2	1 30.4	5 33.8	+7 20.2	+1.1954	0.5249	0.1715	+90	+41
NEW MOON											
180 B. Tauri	6.1	+0.01	- 8.7	+17 7.8	28 18 14.6	-7 23.2	-0.7038	0.5660	+0.0806	-6	-72
193 B. Tauri	6.2	+0.02	- 8.8	+17 4.5	20 16.8	-5 25.2	-0.4844	0.5668	+0.0775	+7	-53
$\delta$ Tauri	3.9	0.04	9.0	17 21.5	29 0 56.3	-0 55.3	-0.4404	0.5686	0.0701	+10	-50
63 Tauri	5.7	0.03	9.1	16 35.6	1 9.0	-0 42.2	+0.3877	0.5686	0.0698	+59	-1
64 Tauri	4.9	0.04	9.0	17 15.7	1 27.5	-0 25.3	-0.3017	0.5687	0.0693	+17	-40
68 Tauri	4.3	0.04	9.0	17 44.9	2 4.4	+0 10.3	-0.7758	0.5690	0.0683	-11	-73
75 Tauri	5.2	+0.04	- 9.3	+16 11.0	3 24.8	+1 27.9	+0.9755	0.5694	+0.0663	+90	+36
264 B. Tauri	4.8	0.04	9.4	16 1.4	4 21.3	+2 22.5	+1.2075	0.5698	0.0647	+90	+57
119 H <sup>1</sup> Tauri	6.2	0.06	9.1	17 51.0	5 39.7	+3 38.2	-0.6488	0.5704	0.0625	-3	-66
275 B. Tauri	6.5	0.05	9.4	16 9.5	5 43.3	+3 41.6	+1.1503	0.5703	0.0624	+90	+51
a Tauri ( <i>Ald.</i> )	1.1	0.06	9.5	16 21.1	6 43.9	+4 40.2	+1.0074	0.5706	0.0608	+90	+38
302 B. Tauri	6.1	+0.09	- 9.2	+18 35.5	11 16.7	+9 3.5	-1.1079	0.5722	+0.0532	-37	-72
i Tauri	5.1	0.10	9.3	18 42.3	13 31.1	+11 13.1	-1.1122	0.5729	0.0494	-37	-72
318 B. Tauri	5.7	0.11	9.7	17 1.8	16 10.6	-10 12.9	+0.7850	0.5737	0.0448	+90	+25
m Tauri	5.0	0.15	9.6	18 32.3	20 32.4	-6 0.4	-0.6296	0.5750	0.0372	-2	-62
111 Tauri	5.1	0.18	10.2	17 18.6	30 3 56.3	+1 7.6	+0.8923	0.5770	0.0240	+90	+34
115 Tauri	5.3	+0.19	-10.1	+17 53.6	5 8.1	+2 16.9	+0.3048	0.5773	+0.0219	+54	-1
117 Tauri	6.0	0.19	10.3	17 10.3	5 30.9	+2 38.9	+1.0717	0.5773	0.0212	+90	+47
119 Tauri	4.9	0.20	10.0	18 32.1	7 18.3	+4 22.5	-0.3257	0.5777	0.0180	+10	-37
120 Tauri	5.6	0.21	10.1	18 29.0	7 52.4	+4 55.3	-0.2615	0.5779	0.0169	+21	-32
130 Tauri	5.6	+0.25	-10.5	+17 41.9	13 52.4	+10 42.4	+0.6304	0.5791	+0.0059	+83	+19

# ELEMENTS OF OCCULTATIONS, 1922. 487

MAY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	P	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
19 B. Geminorum	6.2	+0.34	-10.5	+18 41.9	1 1 2.4	- 2 31.9	-0.4660	0.5808	-0.0148	+ 8	-46
124 H <sup>1</sup> . Orionis	5.7	0.34	10.8	17 55.6	1 26.7	- 2 8.5	+0.3342	0.5809	-0.0155	+56	+ 2
71 Orionis	5.1	0.34	10.5	19 10.9	1 35.4	- 2 0.1	-0.9777	0.5809	-0.0158	-25	-71
B. D. + 17° 11.0	6.5	0.34	11.0	17 12.3	2 16.5	- 1 20.5	+1.0730	0.5810	-0.0171	+90	+48
287 B. Orionis	6.2	0.35	11.0	17 21.2	3 23.7	- 0 15.7	+0.8974	0.5811	-0.0192	+90	+34
292 B. Orionis	6.5	+0.36	-10.9	+17 47.9	4 24.7	+ 0 43.0	+0.4133	0.5812	-0.0210	+62	+ 5
B. D. + 17° 12.75	6.2	0.40	11.2	16 59.5	8 34.2	+ 4 43.4	+1.1489	0.5816	-0.0288	+90	+54
26 Geminorum	5.2	0.44	11.1	17 43.2	13 20.3	+ 9 19.1	+0.2320	0.5819	-0.0377	+49	- 5
74 B. Geminorum	6.2	0.46	11.0	18 16.6	15 26.9	+11 21.1	+0.4294	0.5820	-0.0415	+10	-46
110 B. Geminorum	6.2	0.52	11.2	17 51.9	21 50.1	- 6 29.7	-0.3043	0.5822	-0.0532	+17	-38
41 H <sup>1</sup> . Geminorum	6.0	+0.51	-11.6	+16 47.1	21 54.3	- 6 25.7	+0.8103	0.5822	-0.0534	+90	+25
51 Geminorum	5.3	0.56	11.8	16 17.4	2 30.1	- 1 59.9	+1.0570	0.5822	-0.0617	+90	+42
1 Geminorum	3.6	0.58	11.7	16 40.7	4 30.1	- 0 4.3	+0.5264	0.5822	-0.0653	+71	+ 7
162 B. Geminorum	5.7	0.64	11.6	17 15.0	10 18.6	+ 5 31.5	-0.4727	0.5820	0.0756	+ 8	-52
68 Geminorum	5.2	0.64	12.0	15 59.5	11 5.7	+ 6 16.8	+0.7649	0.5820	-0.0770	+90	+20
1 Cancri	6.0	+0.74	-12.1	+15 59.8	21 1.8	- 8 8.8	-0.0904	0.5814	-0.0939	+29	-29
2 B. Cancri	6.0	0.75	11.8	16 43.6	21 40.3	- 7 31.7	-0.9012	0.5813	-0.0950	-19	-74
5 Cancri	5.9	0.76	11.8	16 40.1	22 56.4	- 6 18.4	-0.9626	0.5812	-0.0971	-23	-74
30 B. Cancri	6.1	0.81	12.5	14 51.5	3 25.9	- 2 32.8	+0.4878	0.5808	-0.1037	+68	+ 1
29 Cancri	5.9	0.89	12.6	14 28.0	10 31.6	+ 4 51.4	+0.0621	0.5801	-0.1155	+38	-23
84 B. Cancri	6.4	+0.91	-12.9	+13 31.3	12 43.8	+ 6 58.9	+0.7700	0.5798	-0.1188	+90	+16
A <sup>1</sup> Cancri	5.5	0.96	13.1	12 57.5	16 46.8	+10 53.1	+0.8504	0.5793	-0.1248	+90	+21
A <sup>2</sup> Cancri	5.7	0.98	13.3	12 23.6	18 23.0	-11 34.3	+1.2236	0.5792	-0.1271	+90	+53
60 Cancri	5.7	1.02	13.4	11 55.3	22 14.5	- 7 51.1	+1.2025	0.5787	-0.1325	+90	+49
a Cancri	4.3	1.04	13.3	12 9.4	23 20.2	- 6 47.7	+0.8163	0.5786	-0.1340	+90	+18
209 B. Cancri	6.5	+1.09	-13.3	+11 52.7	4 11.6	- 2 7.0	+0.4312	0.5780	-0.1405	+62	- 6
222 B. Cancri	6.3	1.13	13.2	11 49.5	7 40.4	+ 1 14.4	-0.0106	0.5776	-0.1449	+34	-30
ξ Leonis	5.1	1.20	13.2	11 38.5	13 45.0	+ 7 5.8	-0.7280	0.5769	-0.1522	- 6	-79
h Leonis	5.2	1.20	13.7	10 3.4	13 46.0	+ 7 6.9	+0.8766	0.5769	-0.1522	+90	+20
o Leonis	3.8	1.24	13.6	10 14.7	17 44.5	+10 56.8	+0.0721	0.5765	-0.1567	+39	-27
83 B. Leonis	5.9	+1.32	-13.6	+ 9 18.0	5 02.1	- 6 40.2	-0.0332	0.5758	-0.1636	+33	-34
89 B. Leonis	6.2	1.34	13.8	8 41.0	1 5.8	- 5 57.7	+0.4691	0.5758	-0.1643	+65	- 5
π Leonis	4.9	1.35	13.9	8 24.9	2 0.3	- 5 5.2	+0.5900	0.5757	-0.1652	+76	+ 1
43 Leonis	6.3	1.47	14.0	6 56.1	11 54.7	+ 4 28.0	+0.4007	0.5750	-0.1738	+60	-10
155 B. Leonis	6.5	1.47	14.3	6 5.2	12 1.6	+ 4 34.7	+1.2357	0.5750	-0.1739	+90	+48
48 Leonis	5.2	+1.52	-13.6	+ 7 21.1	17 2.6	+ 9 24.9	-0.9203	0.5748	-0.1777	-18	-83
35 Sextantis	6.1	1.58	14.1	5 9.2	20 46.3	-10 59.3	+0.6236	0.5746	-0.1801	+79	+ 1
37 Sextantis	6.3	1.58	13.5	6 46.8	21 57.6	- 9 50.6	-1.2267	0.5746	-0.1809	-45	-84
d Leonis	5.0	1.67	14.0	4 2.0	6 416.4	- 3 45.3	+0.3810	0.5745	-0.1843	+58	-13
75 Leonis	5.4	1.76	14.0	2 26.2	11 34.0	+ 3 16.8	+0.6260	0.5746	-0.1874	+79	0
76 Leonis	6.0	+1.77	-14.1	+ 2 4.5	12 16.8	+ 3 58.1	+0.8545	0.5746	-0.1877	+90	+15
79 Leonis	5.5	1.79	13.9	1 49.9	14 30.7	+ 6 7.2	+0.6773	0.5747	-0.1884	+85	+ 3
83 Leonis	6.3	1.78	13.3	3 26.1	15 43.0	+ 7 17.0	-1.1558	0.5748	-0.1887	-37	-87
τ Leonis	5.2	1.80	13.4	3 16.9	16 12.3	+ 7 45.3	-1.0948	0.5748	-0.1888	-31	-87
9 B. Virginis	6.2	1.92	13.5	+ 0 6.7	7 123.8	- 7 22.9	+0.3367	0.5753	-0.1904	+55	-16
31 B. Virginis	6.4	+1.99	-13.4	- 1 20.2	6 36.5	- 2 21.3	+0.7914	0.5758	-0.1905	+89	+10
91 G. Virginis	6.5	2.22	11.6	3 48.2	5 21.2	- 4 25.4	-1.0288	0.5788	-0.1847	-27	-90
θ Virginis	4.4	2.30	10.9	5 7.6	12 21.5	+ 2 19.7	-0.9867	0.5799	-0.1808	-24	-90
m Virginis	5.2	2.44	9.6	8 18.8	9 152.0	- 8 39.2	-0.1720	0.5823	-0.1704	+23	-45
575 B. Virginis	6.2	2.48	9.4	9 19.3	4 14.6	- 6 21.7	+0.4377	0.5828	-0.1682	+59	-10
623 B. Virginis	6.5	+2.51	- 8.2	- 8 53.1	11 30.5	+ 0 38.2	-1.1970	0.5841	-0.1609	-45	-90

## 488 ELEMENTS OF OCCULTATIONS, 1922.

MAY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	F	$\alpha'$	$\nu'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
95 Virginis	5.4	+2.51	-8.0	8 56.6	9 12 30.4	+ 1 36.0	-1.2987	0.5842	-0.1598	-61	-85
96 Virginis	6.5	2.54	8.0	9 58.1	13 28.0	+ 2 31.4	-0.4226	0.5844	0.1587	+ 8	-62
$\kappa$ Virginis	4.3	2.54	7.7	9 54.8	15 6.4	+ 4 6.2	-0.7365	0.5847	0.1569	-10	-90
2 Libræ	6.3	2.59	7.2	11 21.6	19 32.2	+ 8 22.2	+0.0357	0.5854	0.1516	+32	-33
4 G. Libræ	6.5	2.59	7.1	11 19.1	20 4.0	+ 8 52.9	-0.0874	0.5855	0.1510	+25	-40
6 B. Libræ	6.2	+2.60	- 6.2	-11 58.6	10 1 16.2	-10 6.5	-0.1930	0.5863	-0.1443	+19	-46
22 B. Libræ	6.4	2.65	5.6	12 30.8	5 48.6	- 5 44.1	-0.2920	0.5869	0.1382	+13	-52
$\mu$ Libræ	5.4	2.68	5.5	13 49.6	6 23.4	- 5 10.7	+0.9540	0.5870	0.1374	+77	+22
0 Libræ	6.2	2.73	3.2	15 16.1	19 37.3	+ 7 33.8	+0.7294	0.5882	0.1176	+75	+ 7
$\gamma$ Libræ	4.0	2.72	2.2	14 31.9	11 1 40.5	-10 36.5	-0.7026	0.5885	0.1077	-13	-90
190 B. Libræ	6.5	+2.72	- 1.6	-14 47.7	4 57.7	- 7 26.7	-0.7801	0.5886	-0.1022	-19	-90
$\eta$ Libræ	5.5	2.73	1.6	15 25.6	5 13.8	- 7 11.1	-0.1640	0.5886	0.1017	+16	-44
$\theta$ Libræ	4.4	2.76	0.7	16 30.1	9 16.5	- 3 17.5	+0.5366	0.5886	0.0948	+59	- 4
49 Libræ	5.4	2.73	- 0.4	16 18.3	12 0.8	- 0 39.2	+0.0824	0.5885	0.0900	+29	-30
$\chi$ Ophiuchi	4.9	2.76	+ 1.8	18 16.8	23 6.1	+10 1.3	+1.2235	0.5877	0.0701	+72	+51
$\varphi$ Ophiuchi	4.4	+2.71	+ 1.9	-16 26.6	12 0 50.8	+11 42.1	-0.7856	0.5875	-0.0668	-23	-90
24 Scorpæ	5.0	2.72	2.8	17 35.5	5 11.8	- 8 6.5	+0.1240	0.5869	0.0588	+28	-28
78 B. Ophiuchi	6.5	2.67	3.7	16 40.9	11 16.3	- 2 15.5	-1.1400	0.5858	0.0474	-51	-90
90 B. Ophiuchi	6.5	2.69	4.1	18 7.6	12 48.9	- 0 46.3	+0.2851	0.5855	0.0445	+36	-18
29 Ophiuchi	6.4	2.70	4.4	18 46.2	13 41.9	+ 0 4.8	+0.9137	0.5852	0.0428	+72	+20
125 B. Ophiuchi	6.2	+2.66	+ 4.6	-17 30.3	16 24.5	+ 2 41.3	-0.5074	0.5846	-0.0377	- 9	-69
164 B. Ophiuchi	6.0	2.63	5.4	17 40.5	21 19.7	+ 7 25.7	-0.4964	0.5834	0.0285	- 9	-68
192 B. Ophiuchi	6.3	2.63	5.8	18 22.4	23 19.4	+ 9 21.0	+0.1778	0.5828	-0.0247	+28	-24
305 B. Ophiuchi	6.3	2.53	7.9	18 47.2	13 12 41.8	- 1 45.6	+0.4507	0.5784	+0.0002	+44	- 9
6 Sagittarii	6.5	2.48	7.8	17 9.2	15 4.8	+ 0 32.3	-1.2617	0.5774	0.0046	-70	-82
32 G. Sagittarii	5.7	+2.45	+ 8.2	-17 9.9	17 51.9	+ 3 13.3	-1.2316	0.5763	+0.0097	-65	-90
64 B. Sagittarii	6.1	2.45	9.0	18 41.0	21 11.3	+ 6 25.6	+0.4120	0.5750	0.0157	+42	-10
6 B. Scuti	5.9	2.42	8.7	17 23.9	21 56.4	+ 7 9.1	-0.9321	0.5746	0.0170	-37	-90
52 G. Sagittarii	6.4	2.44	9.0	18 29.4	22 2.8	+ 7 15.3	-0.2216	0.5746	0.0172	+30	-22
17 H <sup>1</sup> . Sagittarii	6.4	2.43	9.1	18 38.9	22 35.2	+ 7 46.5	+0.3981	0.5744	0.0182	+42	-12
Y Sagit. (var.)	5.4	+2.42	+ 9.3	-18 53.6	23 44.8	+ 8 53.7	+0.6796	0.5739	+0.0202	+67	+ 5
85 B. Sagittarii	6.0	2.38	9.4	17 50.8	14 2 38.2	+11 41.0	-0.3618	0.5726	0.0253	- 2	-58
95 B. Sagittarii	5.7	2.39	9.7	18 46.6	3 36.8	-11 22.5	+0.6490	0.5721	0.0271	+63	+ 3
100 B. Sagittarii	5.0	2.37	9.7	18 27.3	4 9.9	-10 50.5	+0.3233	0.5719	0.0280	+37	-16
0 Sagittarii	4.0	2.12	11.8	17 59.5	15 2 41.8	+10 54.7	+0.8945	0.5609	0.0651	+73	+19
$\nu$ Sagittarii	4.4	+2.10	+11.2	-16 6.0	2 44.8	+10 57.7	-1.1321	0.5608	+0.0652	-49	-90
54 Sagittarii	5.4	2.00	11.9	16 28.2	11 29.6	- 4 35.1	-0.1091	0.5562	0.0782	+17	-41
e Sagittarii	5.2	1.99	12.0	16 18.3	12 19.8	- 3 46.6	-0.2213	0.5558	0.0794	+11	-48
283 B. Sagittarii	5.5	1.98	11.7	15 38.9	12 49.2	- 3 18.1	-0.8895	0.5555	0.0801	-28	-90
g Sagittarii	5.1	1.90	12.2	15 41.8	19 34.0	+ 3 13.3	-0.2677	0.5520	0.0895	+10	-51
16 B. Capricorni	6.2	+1.76	+12.4	-15 1.7	18 6 26.6	-10 15.0	+0.0591	0.5464	+0.1036	+29	-31
$\beta$ Capricorni	3.2	1.76	12.4	15 1.5	6 33.4	-10 8.5	+0.0675	0.5463	0.1037	+30	-31
27 G. Capricorni	6.2	1.70	12.6	15 18.9	11 24.9	- 5 26.2	+0.9018	0.5440	0.1095	+75	+18
45 B. Capricorni	6.1	1.68	12.3	13 59.2	12 56.7	- 3 57.4	-0.3757	0.5432	0.1113	+ 6	-58
$\tau$ Capricorni	5.2	1.65	12.7	15 13.5	15 24.5	- 1 34.2	+1.2531	0.5420	0.1141	+75	+52
84 B. Capricorni	6.0	+1.58	+12.0	-12 49.9	21 2.5	+ 3 53.3	-0.7008	0.5393	+0.1203	-11	-90
$\nu$ Aquarii	4.5	1.47	11.7	11 41.1	17 6 26.9	-10 59.8	-0.7805	0.5351	0.1298	-15	-90
51 G. Aquarii	6.5	1.44	11.4	10 55.5	8 48.6	- 8 42.5	-1.3052	0.5341	0.1320	-67	-79
72 B. Aquarii	6.5	1.35	11.7	11 54.2	15 51.0	- 1 52.8	+0.7203	0.5313	0.1384	+79	+ 7
137 B. Capricorni	6.2	1.29	11.3	10 55.5	21 35.5	+ 3 41.3	+0.4525	0.5292	0.1430	+59	-10
e <sup>1</sup> Capricorni	5.3	+1.26	+10.8	- 9 26.3	18 0 26.7	+ 6 27.4	-0.7741	0.5282	+0.1452	-12	-90

# ELEMENTS OF OCCULTATIONS, 1922. 489

MAY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	F	x'	y'	N.	S.
		Δα	Δδ								
ε <sup>2</sup> Capricorni	6.3	+1.25	+10.8	- 9 38.0	18 1 5.6	+ 7 5.2	-0.4645	0.5280	+0.1457	+ 6	-65
96 B. Aquarii	6.5	1.21	11.1	10 40.6	4 51.8	+10 44.6	+1.2396	0.5268	-0.1484	+80	+48
θ Aquarii	4.3	1.09	9.8	8 10.2	16 57.6	- 1 30.8	+0.3184	0.5234	-0.1563	+51	-17
ρ Aquarii	5.3	1.07	9.8	8 12.6	18 43.6	+ 0 12.1	+0.6412	0.5230	-0.1573	+77	+ 1
170 B. Aquarii	6.0	1.05	9.5	7 35.2	20 29.0	+ 1 54.4	+0.2282	0.5226	-0.1582	+46	-22
186 B. Aquarii	6.1	+1.02	+ 9.1	- 6 57.1	19 0 33.8	+ 5 52.2	+0.1762	0.5218	+0.1604	+43	-25
252 B. Aquarii	5.8	0.89	8.0	5 24.1	13 11.9	- 5 51.6	+0.5246	0.5199	-0.1659	+68	- 6
197 G. Aquarii	6.3	0.88	7.9	5 13.5	14 19.1	- 4 46.3	+0.5157	0.5198	-0.1663	+67	- 6
263 B. Aquarii	6.1	0.86	7.7	5 7.7	16 34.2	- 2 35.1	+0.7846	0.5196	-0.1671	+85	+ 9
293 B. Aquarii	5.5	0.80	6.9	3 55.2	20 0 2.5	+ 4 40.3	+0.7039	0.5192	-0.1694	+86	+ 4
13 Piscium	6.4	+0.74	+ 5.6	- 1 30.9	8 46.2	-10 51.0	-0.4690	0.5192	+0.1712	+ 9	-65
14 Piscium	5.9	0.73	5.6	- 1 40.6	9 55.9	- 9 43.3	-0.0912	0.5193	-0.1714	+29	-40
21 Piscium	5.6	0.68	4.3	+ 0 38.6	18 4.8	- 1 48.3	-1.2543	0.5197	-0.1723	-48	-90
60 B. Piscium	6.0	0.64	4.4	+ 0 19.4	20 54.4	+ 0 56.4	+0.3018	0.5200	-0.1726	+53	-18
98 B. Piscium	6.3	0.56	3.0	+ 1 15.4	21 9 5.0	-11 13.9	+0.6597	0.5219	-0.1723	+83	+ 2
44 Piscium	6.0	+0.53	+ 2.7	+ 1 30.5	13 5.7	- 7 20.0	+1.0713	0.5226	+0.1719	+90	+30
147 B. Piscium	5.9	0.49	0.4	4 52.8	22 1 4.4	+ 4 17.6	-0.5903	0.5257	-0.1696	+ 2	-74
171 B. Piscium	6.3	0.44	+ 0.1	6 3.8	7 2.2	+10 4.9	-0.8810	0.5276	-0.1676	-16	-84
73 Piscium	6.2	0.42	0.0	5 14.3	9 38.7	-11 23.2	+0.4581	0.5284	-0.1667	+64	- 9
ε Piscium	5.6	0.39	- 0.2	5 14.3	11 27.4	- 9 37.8	+0.7600	0.5291	-0.1660	+90	+ 9
ζ Piscium	5.6	+0.41	- 0.8	+ 7 9.8	14 10.8	- 6 59.3	-0.8957	0.5300	+0.1649	-17	-83
88 Piscium	6.2	0.40	0.7	6 35.0	14 41.3	- 6 29.7	-0.1772	0.5302	-0.1647	+25	-44
263 B. Piscium	6.4	0.36	1.4	7 33.4	21 38.5	+ 0 15.1	-0.1075	0.5329	-0.1613	+29	-39
ο Piscium	4.5	0.32	2.4	8 45.9	23 6 12.5	+ 8 33.5	-0.0613	0.5365	-0.1564	+31	-36
ξ Arietis	5.5	0.22	4.2	10 15.4	24 1 36.8	+ 3 21.7	+1.2165	0.5457	+0.1415	+90	+50
NEW MOON.											
19 B. Geminorum	6.2	+0.18	-10.4	+18 41.9	28 7 12.4	+ 5 25.6	-0.3390	0.5872	-0.0135	+15	-37
124 H <sup>1</sup> . Orionis	5.7	0.18	10.5	17 55.6	7 36.2	+ 5 48.5	+0.4560	0.5872	-0.0143	+65	+ 8
71 Orionis	5.1	0.18	10.4	19 10.9	7 44.7	+ 5 56.7	-0.8462	0.5873	-0.0145	-15	-71
B. D. +17° 1191	6.5	+0.18	-10.6	+17 12.3	8 25.1	+ 6 35.6	+1.1908	0.5873	-0.0158	+90	+60
287 B. Orionis	6.2	0.18	10.7	17 21.2	9 31.1	+ 7 39.2	+1.0180	0.5874	-0.0180	+90	+43
292 B. Orionis	6.5	0.19	10.6	17 47.9	10 30.9	+ 8 36.7	+0.5387	0.5875	-0.0199	+73	+12
26 Geminorum	5.2	0.23	10.8	17 43.2	19 16.8	- 6 56.9	+0.3706	0.5880	-0.0367	+58	+ 2
74 B. Geminorum	6.2	0.24	10.7	18 16.6	21 21.2	- 4 57.1	-0.2840	0.5881	-0.0407	+18	-36
110 B. Geminorum	6.2	10.28	-10.8	+17 51.9	29 3 38.0	+ 1 5.6	-0.1517	0.5880	-0.0525	+26	-29
41 H <sup>1</sup> . Geminorum	6.0	0.27	11.1	16 47.1	3 42.2	+ 1 9.5	+0.9563	0.5880	-0.0527	+90	+36
51 Geminorum	5.3	0.30	11.2	16 17.4	8 13.5	+ 5 30.9	+1.2073	0.5877	-0.0611	+90	+58
λ Geminorum	3.6	0.32	11.2	16 40.7	10 11.6	+ 7 24.6	+0.6823	0.5876	-0.0647	+90	+16
162 B. Geminorum	5.7	0.36	11.0	17 15.0	15 55.0	-11 4.8	-0.3053	0.5871	-0.0752	+17	-41
68 Geminorum	5.2	+0.36	-11.3	+15 59.5	16 41.4	-10 20.2	+0.9273	0.5869	-0.0765	+90	+31
f Geminorum	5.3	0.38	10.9	17 51.0	19 7.4	- 7 59.6	-1.1702	0.5866	-0.0809	-43	-73
1 Cancri	6.0	0.44	11.3	15 59.8	2 29.9	- 0 53.4	+0.0862	0.5855	-0.0936	+40	-19
2 B. Cancri	6.0	0.44	11.1	16 43.6	3 8.0	- 0 16.7	-0.7211	0.5854	-0.0947	- 6	-74
5 Cancri	5.9	0.45	11.1	16 40.1	4 23.3	+ 0 55.8	-0.7812	0.5852	-0.0968	-10	-74
30 B. Cancri	6.1	+0.49	-11.6	+14 51.5	8 24.2	+ 4 47.9	+0.6683	0.5844	-0.1034	+87	+12
29 Cancri	5.9	0.55	11.6	14 28.0	15 52.0	+11 59.2	+0.2503	0.5828	-0.1153	+50	-13
84 B. Cancri	6.4	0.58	11.8	13 31.3	18 3.2	- 9 54.3	+0.9590	0.5823	-0.1180	+90	+29
90 B. Cancri	6.3	0.58	11.2	15 34.9	19 2.4	- 8 57.3	-1.2600	0.5821	-0.1201	-54	-75
Δ <sup>1</sup> Cancri	5.5	0.62	11.9	12 57.5	22 4.8	- 6 1.6	+1.0427	0.5814	-0.1246	+90	+35
α Cancri	4.3	+0.68	-12.0	+12 9.4	31 4 36.6	+ 0 16.0	+1.0138	0.5798	-0.1338	+90	+31

## 490 ELEMENTS OF OCCULTATIONS, 1922.

MAY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	F	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
209 B. Cancri	6.5	+0.73	-12.0	+11 52.8	d h m	h m					
222 B. Cancri	6.3	0.77	11.8	11 49.5	31 9 27.3	+ 4 56.1	+0.6317	0.5787	-0.1402	+81	+ 6
ε Leonis	5.1	0.83	11.7	11 38.6	12 56.0	+ 8 17.3	+0.1913	0.5778	0.1446	+46	-18
h Leonis	5.2	0.81	12.2	10 3.4	19 1.2	- 9 50.7	-0.5252	0.5764	0.1518	+ 6	-64
o Leonis	3.8	+0.88	-12.0	+10 14.7	19 2.1	- 9 49.8	+1.0831	0.5764	0.1518	+90	+35
					23 1.4	- 5 59.0	+0.2780	0.5754	-0.1562	+51	-16

JUNE.

83 B. Leonis	5.9	+0.97	-12.0	+ 9 18.0	1 5 40.8	+ 0 26.1	+0.1739	0.5739	-0.1629	+44	-22
89 B. Leonis	6.2	0.98	12.2	8 41.0	6 25.2	+ 1 9.0	+0.6783	0.5737	0.1636	+86	+ 6
π Leonis	4.9	+0.99	-12.3	+ 8 24.9	7 20.1	+ 2 1.9	+0.7999	0.5736	-0.1645	+90	+14
43 Leonis	6.3	1.12	12.3	6 56.1	17 20.0	+11 40.6	+0.6106	0.5716	0.1729	+77	+ 1
48 Leonis	5.2	1.18	11.8	7 21.1	22 31.7	- 7 18.7	-0.7195	0.5707	0.1766	- 6	-83
35 Sextantis	6.1	1.24	12.4	5 9.2	2 18.5	- 3 39.7	+0.8340	0.5701	0.1790	+90	+14
37 Sextantis	6.3	1.24	11.7	6 46.9	3 30.9	- 2 29.9	-1.0298	0.5699	0.1797	-26	-83
d Leonis	5.0	+1.34	-12.3	+ 4 2.0	9 55.9	+ 3 41.6	+0.5875	0.5691	-0.1831	+74	- 1
75 Leonis	5.4	1.45	12.3	2 26.2	17 21.6	+10 51.9	+0.8312	0.5684	0.1860	+90	+13
76 Leonis	6.0	1.46	12.4	2 4.5	18 5.2	+11 34.1	+1.0614	0.5683	0.1862	+90	+29
79 Leonis	5.5	1.49	12.2	1 50.0	20 21.9	-10 14.2	+0.8814	0.5682	0.1869	+90	+16
83 Leonis	6.3	1.47	11.5	3 26.1	21 35.8	- 9 2.8	-0.9698	0.5681	0.1872	-22	-87
τ Leonis	5.2	+1.50	-11.6	+ 3 17.0	22 5.6	- 8 34.0	-0.9088	0.5681	-0.1873	-18	-87
9 B. Virginis	6.2	1.64	11.9	0 6.7	3 7 29.5	+ 0 30.2	+0.5296	0.5679	0.1888	+69	- 5
27 B. Virginis	6.5	1.69	11.2	+ 0 57.7	11 57.3	+ 4 48.8	-1.1730	0.5679	0.1889	-39	-89
31 B. Virginis	6.4	1.73	11.9	- 1 20.1	12 50.0	+ 5 39.5	+0.9843	0.5679	0.1889	+89	+23
JUPITER	-1.8	..	..	2 14.7	4 5 47.8	- 1 57.8	-1.2831	0.5695	0.1858	-53	-90
91 G. Virginis	6.5	+2.04	-10.2	- 3 48.2	12 11.5	+ 4 12.5	-0.8856	0.5698	-0.1832	-17	-90
θ Virginis	4.4	2.15	9.6	5 7.5	19 23.8	+11 9.7	-0.8536	0.5709	0.1794	-15	-90
m Virginis	5.2	2.35	8.6	8 18.7	5 9 17.6	+ 0 34.0	-0.9515	0.5734	0.1695	+29	-37
575 B. Virginis	6.2	2.40	8.5	9 19.3	11 44.2	+ 2 55.5	+0.5614	0.5739	0.1674	+69	- 3
623 B. Virginis	6.5	2.47	7.3	8 53.1	19 12.3	+10 7.7	-1.1064	0.5755	0.1603	-36	-90
95 Virginis	5.4	+2.48	- 7.1	- 8 56.6	20 13.8	+11 7.0	-1.2112	0.5757	-0.1593	-47	-90
96 Virginis	6.5	2.51	7.2	9 58.1	21 12.9	-11 56.0	-0.3264	0.5759	0.1582	+13	-54
κ Virginis	4.3	2.52	6.9	9 54.8	22 54.0	-10 18.5	-0.6471	0.5763	0.1565	- 5	-82
2 Libræ	6.3	2.59	6.6	11 21.6	3 26.9	- 5 55.3	+0.1256	0.5772	0.1514	+37	-27
4 G. Libræ	6.5	2.60	6.5	11 19.1	3 59.6	- 5 23.7	+0.0001	0.5774	0.1508	+30	-34
6 B. Libræ	6.2	+2.64	- 5.6	-11 58.5	9 19.6	- 0 15.3	-0.1170	0.5785	-0.1443	+23	-41
22 B. Libræ	6.4	2.71	5.1	12 30.8	13 58.8	+ 4 13.9	-0.2262	0.5794	0.1384	+16	-48
μ Libræ	5.4	2.74	5.2	13 49.6	14 34.4	+ 4 48.2	+1.0320	0.5796	0.1376	+76	+28
o Libræ	6.2	2.88	3.0	15 16.1	7 4 6.0	- 6 9.6	+0.7767	0.5820	0.1183	+75	+10
γ Libræ	4.0	2.90	1.8	14 31.8	10 16.2	- 0 12.9	-0.6810	0.5830	0.1087	-12	-88
190 B. Libræ	6.5	+2.92	- 1.2	-14 47.7	13 36.9	+ 3 0.4	-0.7658	0.5834	-0.1034	-18	-90
η Libræ	5.5	2.94	1.2	15 25.5	13 53.3	+ 3 16.3	-0.1451	0.5834	0.1029	+17	-43
θ Libræ	4.4	2.98	0.5	16 30.1	18 0.1	+ 7 14.1	+0.5524	0.5838	0.0961	+60	- 3
49 Libræ	5.4	2.97	- 0.2	16 18.3	20 47.0	+ 9 54.8	+0.0889	0.5841	0.0914	+29	-29
χ Ophiuchi	4.9	3.07	+ 2.0	18 16.8	8 8 1.0	- 3 16.0	+1.2133	0.5846	0.0718	+72	+49
φ Ophiuchi	4.4	+3.03	+ 2.4	-16 26.6	9 46.8	- 1 34.0	-0.8114	0.5846	-0.0686	-24	-90
24 Scorpii	5.0	3.07	3.2	17 35.5	14 10.4	+ 2 39.9	+0.0943	0.5845	0.0606	+26	-29
78 B. Ophiuchi	6.5	3.06	4.4	16 40.9	20 17.9	+ 8 33.9	-1.1881	0.5841	0.0493	-57	-90
90 B. Ophiuchi	6.5	3.08	4.5	18 7.6	21 51.1	+10 3.8	+0.2401	0.5840	0.0464	+33	-20
29 Ophiuchi	6.4	3.10	4.8	18 46.2	22 44.4	+10 55.1	+0.8694	0.5839	0.0448	+71	+17
125 B. Ophiuchi	6.2	+3.07	+ 5.3	-17 30.3	9 1 28.0	-10 27.4	-0.5630	0.5836	-0.0397	-12	-74



## ELEMENTS OF OCCULTATIONS, 1922. 491

JUNE.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	s	°	d h m	h m				°	°
164 B. Ophiuchi	6.0	+3.07	+6.2	-17 40.4	9 6 24.4	- 5 41.6	-0.5617	0.5829	-0.0304	-13	-74
192 B. Ophiuchi	6.3	3.08	6.5	18 22.3	8 24.5	- 3 45.9	+0.1105	0.5826	0.0267	+24	-28
305 B. Ophiuchi	6.3	3.06	8.8	18 47.2	21 47.5	+ 9 8.0	+0.3568	0.5796	-0.0017	+37	-14
64 B. Sagittarii	6.1	3.02	10.2	18 41.0	10 6 15.5	- 6 42.3	+0.3011	0.5770	+0.0139	+34	-17
6 B. Scuti	5.9	3.00	10.2	17 23.9	7 0.4	- 5 58.9	-1.0446	0.5768	0.0152	-46	-90
52 G. Sagittarii	6.4	+3.01	+10.3	-18 29.4	7 6.9	- 5 52.7	+0.1091	0.5767	+0.0154	+23	-28
17 H <sup>1</sup> . Sagittarii	6.4	3.02	10.4	18 38.9	7 39.1	- 5 21.6	+0.2845	0.5766	0.0164	+33	-18
Y Sagit. (var.)	5.4	3.01	10.6	18 53.6	8 48.4	- 4 14.8	+0.5637	0.5761	0.0185	+54	- 2
85 B. Sagittarii	6.0	2.98	10.9	17 50.7	11 40.9	- 1 28.4	+0.4830	0.5752	0.0237	- 9	-67
95 B. Sagittarii	5.7	2.99	11.1	18 46.6	12 39.2	- 0 32.2	+0.5255	0.5748	0.0254	+51	- 4
100 B. Sagittarii	5.0	+2.98	+11.2	-18 27.3	13 12.1	- 0 0.4	+0.1990	0.5746	+0.0263	+29	-23
187 B. Sagittarii	6.4	2.88	13.3	18 51.4	11 4 59.6	- 8 46.0	+1.2637	0.5680	0.0534	+71	+61
Q Sagittarii	4.0	2.82	14.0	17 59.5	11 32.8	- 2 26.3	+0.7281	0.5649	0.0640	+72	+ 8
45 Sagittarii	6.0	2.82	14.0	18 27.0	11 36.8	- 2 22.4	+1.2231	0.5649	0.0641	+72	+51
54 Sagittarii	5.4	2.72	14.6	16 28.2	20 14.7	+ 5 57.9	-0.2874	0.5607	0.0774	+ 7	-52
e Sagittarii	5.2	+2.72	+14.6	-16 18.2	21 4.4	+ 6 46.0	-0.4007	0.5602	+0.0786	+ 1	-60
283 B. Sagittarii	5.5	2.71	14.5	15 38.9	21 33.4	+ 7 13.9	-1.0677	0.5600	0.0793	-42	-90
g Sagittarii	5.1	2.64	15.1	15 41.7	12 4 13.4	-10 19.4	-0.4582	0.5566	0.0889	- 1	-65
16 B. Capricorni	6.2	2.54	15.7	15 1.6	14 57.7	+ 0 3.9	-0.1483	0.5510	0.1032	+17	-43
$\beta$ Capricorni	3.2	2.53	15.8	15 1.5	15 4.4	+ 0 10.3	-0.1400	0.5510	0.1034	+18	-43
27 G. Capricorni	6.2	+2.48	+16.1	-15 18.8	19 52.2	+ 4 48.9	+0.6846	0.5485	+0.1093	+73	+ 4
45 B. Capricorni	6.1	2.47	15.9	13 59.2	21 22.8	+ 6 16.5	-0.5903	0.5478	0.1111	- 6	-76
$\tau$ Capricorni	5.2	2.44	16.3	15 13.5	23 48.7	+ 8 37.7	+1.0292	0.5465	0.1140	+75	+28
84 B. Capricorni	6.0	2.38	15.9	12 49.8	13 5 22.3	- 9 59.1	-0.9244	0.5437	0.1203	-26	-90
$\nu$ Aquarii	4.5	2.28	15.9	11 41.0	14 39.8	- 0 59.1	-1.0146	0.5392	0.1299	-31	-90
72 B. Aquarii	6.5	+2.18	+16.1	-11 54.1	23 57.4	+ 8 1.4	+0.4714	0.5350	+0.1385	+59	- 8
137 B. Capricorni	6.2	2.12	15.9	10 55.4	14 5 38.2	-10 28.2	+0.1996	0.5325	0.1433	+42	-23
c <sup>1</sup> Capricorni	5.3	2.09	15.4	9 26.2	8 27.7	- 7 43.8	-1.0255	0.5314	0.1455	-30	-90
c <sup>2</sup> Capricorni	6.3	2.08	15.5	9 37.9	9 6.2	- 7 6.4	-0.7174	0.5312	0.1460	- 9	-90
96 B. Aquarii	6.5	2.04	15.8	10 40.5	12 50.2	- 3 29.2	+0.9789	0.5297	0.1487	+79	+23
$\theta$ Aquarii	4.3	+1.92	+14.8	- 8 10.1	15 0 50.2	+ 8 9.4	+0.0533	0.5256	+0.1565	+35	-31
$\rho$ Aquarii	5.3	1.90	14.8	8 12.6	2 35.5	+ 9 51.7	+0.3745	0.5250	0.1575	+55	-14
170 B. Aquarii	6.0	1.89	14.5	7 35.1	4 20.2	+11 33.3	-0.0383	0.5245	0.1585	+30	-36
186 B. Aquarii	6.1	1.85	14.1	6 57.0	8 23.5	- 8 30.4	-0.0917	0.5234	0.1606	+28	-40
252 B. Aquarii	5.8	1.72	13.2	5 24.0	20 58.4	+ 3 42.5	+0.2534	0.5206	0.1661	+48	-20
197 G. Aquarii	6.3	+1.71	+13.1	- 5 13.4	22 5.4	+ 4 47.6	+0.2444	0.5204	+0.1665	+48	-21
263 B. Aquarii	6.1	1.69	13.0	5 7.6	16 0 20.2	+ 6 58.7	+0.5129	0.5200	0.1673	+67	- 6
293 B. Aquarii	5.5	1.62	12.2	3 55.1	7 47.9	- 9 46.5	+0.4328	0.5190	0.1694	+61	-10
316 B. Aquarii	6.5	1.60	12.1	4 20.4	10 16.8	- 7 21.8	+1.3214	0.5188	0.1700	+81	+61
13 Piscium	6.4	1.56	10.8	1 30.8	16 31.8	- 1 17.6	-0.7379	0.5183	0.1713	- 7	-90
14 Piscium	5.9	+1.54	+10.8	- 1 40.5	17 41.6	- 0 9.8	-0.3598	0.5183	+0.1715	+14	-56
60 B. Piscium	6.0	1.45	9.6	- 0 19.3	17 4 41.9	+10 31.7	+0.0379	0.5184	0.1725	+36	-32
98 B. Piscium	6.3	1.35	8.2	+ 1 15.4	16 56.0	- 1 35.2	+0.4042	0.5195	0.1722	+59	-12
44 Piscium	6.0	1.31	7.7	1 30.6	20 58.2	+ 2 20.0	+0.8198	0.5201	0.1717	+90	+12
147 B. Piscium	5.9	1.26	5.1	4 52.9	18 9 2.1	- 9 56.9	-0.8325	0.5226	0.1694	-13	-85
171 B. Piscium	6.3	+1.20	+ 4.7	+ 6 3.8	15 2.8	- 4 6.7	-1.1170	0.5242	+0.1676	-34	-84
73 Piscium	6.2	1.16	4.7	5 14.4	17 40.7	- 1 33.5	+0.2276	0.5250	0.1667	+48	-21
77 Piscium	6.4	1.15	4.9	4 29.7	18 10.2	- 1 4.8	+1.1269	0.5252	0.1665	+90	+35
$\epsilon$ Piscium	5.6	1.14	4.5	5 14.3	19 30.2	+ 0 12.8	+0.5322	0.5256	0.1660	+69	- 4
$\zeta$ Piscium	5.6	1.15	3.7	7 9.9	22 15.1	+ 2 52.9	-1.1227	0.5265	0.1650	-34	-83
88 Piscium	6.2	+1.13	+ 3.8	+ 6 35.0	22 45.9	+ 3 22.7	-0.4023	0.5267	+0.1648	+12	-58

## 492 ELEMENTS OF OCCULTATIONS, 1922.

JUNE.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	F	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
263 B. Piscium	6.4	+1.08	+2.9	+7 33.5	19 5 46.8	+10 11.1	-0.3229	0.5293	+0.1615	+16	-52
o Piscium	4.5	1.02	+1.7	8 46.0	14 25.4	-5 25.8	-0.2636	0.5328	0.1567	+20	-47
$\xi$ Arietis	5.5	0.86	-0.7	10 15.5	20 9 59.4	-10 27.9	+1.0487	0.5424	0.1424	+90	+33
31 Arietis	5.7	0.85	1.8	12 6.6	15 41.7	-4 56.4	-0.1531	0.5455	0.1372	+26	-38
38 Arietis	5.2	0.81	2.1	12 7.1	19 42.2	-1 3.5	+0.3804	0.5477	0.1333	+58	-8
147 B. Arietis	5.8	+0.74	-3.3	+12 53.2	21 5 51.6	+8 46.1	+0.8529	0.5536	+0.1225	+90	+21
30 B. Tauri	6.4	0.66	5.1	15 10.5	20 20.6	-1 13.9	+0.0568	0.5622	0.1045	+38	-22
33 B. Tauri	6.3	0.66	5.4	16 17.0	21 4.3	-0 31.6	-1.0446	0.5626	0.1035	-30	-74
148 B. Tauri	5.9	0.63	6.1	17 5.6	22 3 15.8	+5 27.1	-1.2871	0.5663	0.0948	-66	-72
162 B. Tauri	6.3	0.60	6.3	17 4.5	6 36.1	+8 40.5	-0.9568	0.5682	0.0900	-23	-73
180 B. Tauri	6.1	+0.58	-6.6	+17 7.8	9 52.8	+11 50.4	-0.7266	0.5701	+0.0850	-8	-73
193 B. Tauri	6.2	0.57	6.7	17 4.6	11 52.9	-10 13.7	-0.5015	0.5713	+0.0819	+6	-54
NEW MOON.											
29 Cancr	5.9	+0.43	-10.7	+14 28.0	26 22 30.6	-3 34.7	+0.4161	0.5911	-0.1151	+61	-3
84 B. Cancr	6.4	+0.44	-10.8	+13 31.2	27 0 38.5	-1 31.5	+1.1212	0.5906	-0.1185	+90	+43
90 B. Cancr	6.3	0.44	10.4	15 34.9	1 36.2	-0 36.0	-1.0727	0.5904	0.1200	-32	-74
$\Delta^1$ Cancr	5.5	0.47	10.8	12 57.5	4 34.0	+2 15.2	+1.2113	0.5896	0.1246	+90	+52
$\alpha$ Cancr	4.3	0.51	10.8	12 9.4	10 56.2	+8 23.1	+1.1940	0.5878	0.1340	+90	+49
209 B. Cancr	6.5	0.54	10.8	11 52.8	15 40.0	-11 3.6	+0.8239	0.5864	0.1405	+90	+18
222 B. Cancr	6.3	+0.57	-10.6	+11 49.5	19 3.8	-7 47.4	+0.3932	0.5854	-0.1450	+59	-7
$\xi$ Leonis	5.1	0.61	10.5	11 38.6	28 1 0.7	-2 3.7	-0.3077	0.5836	0.1523	+17	-48
$h$ Leonis	5.2	0.62	10.8	10 3.4	1 1.6	-2 2.8	-1.2858	0.5836	0.1523	+86	+60
o Leonis	3.8	0.65	10.6	10 14.7	4 55.7	+1 42.7	+0.4938	0.5824	0.1568	+67	-3
83 B. Leonis	5.9	0.72	10.5	9 18.0	11 26.9	+7 59.7	+0.3992	0.5803	0.1636	+59	-9
89 B. Leonis	6.2	+0.73	-10.7	+8 41.0	12 10.5	+8 41.7	+0.9006	0.5801	-0.1643	+90	+20
$\pi$ Leonis	4.9	0.74	10.7	8 25.0	13 4.3	+9 33.5	+1.0222	0.5798	0.1652	+90	+29
43 Leonis	6.3	0.85	10.6	6 56.2	22 53.5	-4 58.4	+0.8461	0.5768	0.1736	+90	+16
48 Leonis	5.2	0.90	10.1	7 21.2	29 4 0.3	-0 2.6	-0.4706	0.5754	0.1773	+8	-62
35 Sextantis	6.1	0.96	10.6	5 9.3	7 43.9	+3 33.0	+1.0768	0.5744	0.1797	+90	+32
37 Sextantis	6.3	+0.96	-10.0	+6 46.9	8 55.4	+4 41.9	-0.7758	0.5741	-0.1804	-9	-83
$d$ Leonis	5.0	1.05	10.4	4 2.0	15 15.7	+10 48.7	+0.8374	0.5725	0.1837	+90	+14
75 Leonis	5.4	1.15	10.4	2 26.2	22 37.2	-6 5.3	+1.0847	0.5709	0.1865	+90	+31
76 Leonis	6.0	1.16	10.4	2 4.5	23 20.5	-5 23.5	+1.3145	0.5707	0.1867	+84	+60
79 Leonis	5.5	1.19	10.3	1 50.0	30 1 36.1	-3 12.6	+1.1362	0.5703	0.1873	+90	+36
83 Leonis	6.3	+1.17	-9.6	+3 26.2	2 49.5	-2 1.7	-0.7092	0.5701	-0.1876	-5	-86
$\tau$ Leonis	5.2	1.20	9.7	3 17.0	3 19.2	-1 33.1	-0.6483	0.5700	0.1877	-2	-80
9 B. Virginis	6.2	1.34	10.0	0 6.7	12 40.6	+7 28.7	+0.7883	0.5685	0.1890	+90	+10
27 B. Virginis	6.5	$\frac{1}{2}$ 40	9.2	+0 57.7	17 8.0	+11 46.8	-0.9128	0.5680	0.1891	-8	-89
31 B. Virginis	6.4	+1.43	-10.0	-1 20.1	18 0.6	-11 22.4	+1.2432	0.5679	-0.1890	+89	+47

JULY.

13 Virginis	5.9	+1.52	-8.8	-0 21.4	1 1 52.1	-3 47.3	-1.2296	0.5672	-0.1881	-45	-90
JUPITER	-1.6	..	..	2 44.0	12 32.2	+6 30.6	-0.8156	0.5643	0.1837	-12	-90
38 Virginis	6.1	+1.75	-8.1	-3 7.9	17 16.8	+11 5.4	-1.2852	0.5668	-0.1831	-54	-90
91 G. Virginis	6.5	1.77	8.3	3 48.1	17 28.0	+11 16.3	-0.6385	0.5668	0.1830	-1	-80
$\theta$ Virginis	4.4	1.89	7.9	5 7.5	2 04.6	-5 42.2	-0.6131	0.5671	0.1791	0	-78
72 Virginis	6.1	2.02	7.0	6 4.2	9 51.6	+3 5.8	-1.2591	0.5677	0.1730	-51	-90
$m$ Virginis	5.2	2.12	7.1	8 18.7	14 49.6	+7 53.4	+0.1775	0.5682	0.1691	+42	-25
575 B. Virginis	6.2	+2.17	-7.1	-9 19.3	17 18.5	+10 17.3	+0.7911	0.5685	-0.1670	+81	+10

## ELEMENTS OF OCCULTATIONS, 1922. 493

JULY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	$\gamma$	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
623 B. Virginis	6.5	+2.26	-5.8	8 53.1	3 0 54.3	-6 23.0	-0.8976	0.5695	-0.1600	-20	-90
95 Virginis	5.4	2.27	5.7	8 56.6	1 57.0	-9 22.5	-1.0048	0.5696	0.1590	-28	-90
96 Virginis	6.5	2.31	5.9	9 58.0	2 57.1	-4 24.4	-0.1154	0.5698	0.1580	+25	-41
$\kappa$ Virginis	4.3	2.33	5.5	9 54.8	4 40.1	-2 45.0	-0.4409	0.5700	0.1562	+7	-63
2 Libræ	6.3	2.41	5.4	11 21.6	9 18.2	+1 43.3	+0.3303	0.5707	0.1512	+50	-16
4 G. Libræ	6.5	+2.42	-5.2	-11 19.1	9 51.6	+2 15.6	+0.2031	0.5708	-0.1506	+42	-23
6 B. Libræ	6.2	2.47	4.4	11 58.5	15 18.1	+7 30.6	+0.0763	0.5716	0.1442	+35	-31
22 B. Libræ	6.4	2.57	4.0	12 30.8	20 3.1	-11 54.4	-0.0418	0.5724	0.1384	+27	-38
$\mu$ Libræ	5.4	2.60	4.3	13 49.6	20 39.5	-11 19.3	+1.2256	0.5725	0.1376	+77	+43
0 Libræ	6.2	2.79	2.2	15 16.1	4 10 28.8	+2 0.7	+0.9435	0.5747	0.1188	+75	+21
$\gamma$ Libræ	4.0	+2.84	-0.9	-14 31.8	16 47.3	+8 5.8	-0.5395	0.5757	-0.1094	-4	-72
190 B. Libræ	6.5	2.88	0.4	14 47.7	20 12.5	+11 23.6	-0.6319	0.5761	0.1041	-10	-81
$\eta$ Libræ	5.5	2.90	-0.5	15 25.5	20 29.3	+11 39.9	-0.0063	0.5762	0.1037	+25	-35
$\theta$ Libræ	4.4	2.97	+0.1	16 30.1	5 04.6	-8 16.9	+0.6890	0.5767	0.0970	+72	+5
49 Libræ	5.4	2.96	0.4	16 18.3	3 32.2	-5 32.4	+0.2155	0.5770	0.0924	+37	-22
$\varphi$ Ophiuchi	4.4	+3.09	+3.1	-16 26.6	16 48.7	+7 15.6	-0.7210	0.5780	-0.0700	-18	-90
24 Scorpis	5.0	3.15	3.7	17 35.5	21 17.6	+11 34.9	+0.1826	0.5782	0.0622	+32	-24
78 B. Ophiuchi	6.5	3.17	5.1	16 40.9	6 33.2	-6 24.1	-1.1243	0.5782	0.0511	-49	-90
90 B. Ophiuchi	6.5	3.21	5.0	18 7.6	5 7.2	-4 52.5	+0.3121	0.5782	0.0482	+39	-17
29 Ophiuchi	6.4	3.24	5.2	18 46.2	6 1.5	-4 0.1	+0.9445	0.5782	0.0466	+72	+22
125 B. Ophiuchi	6.2	+3.22	+5.9	-17 30.3	8 48.0	-1 19.7	-0.5057	0.5781	-0.0416	-8	-69
164 B. Ophiuchi	6.0	3.25	6.8	17 40.4	13 49.7	+3 31.3	-0.5157	0.5778	0.0325	-10	-70
192 B. Ophiuchi	6.3	3.27	7.1	18 22.3	15 51.8	+5 29.0	+0.1570	0.5776	0.0287	+27	-26
305 B. Ophiuchi	6.3	3.32	9.5	18 47.2	7 5 26.7	-5 25.1	+0.3734	0.5758	-0.0040	+38	-13
64 B. Sagittarii	6.1	3.33	11.0	18 41.0	14 0.9	+2 50.9	+0.2973	0.5740	+0.0115	+34	-18
6 B. Scuti	5.9	+3.31	+11.2	-17 23.9	14 46.4	+3 34.8	-1.0580	0.5738	+0.0128	-47	-90
52 G. Sagittarii	6.4	3.33	11.2	18 29.4	14 52.9	+3 41.0	+0.1021	0.5738	0.0130	+23	-29
17 H <sup>1</sup> Sagittarii	6.4	3.33	11.2	18 38.9	15 25.5	+4 12.5	+0.2773	0.5737	0.0140	+33	-19
$\gamma$ Sagit. (var.)	5.4	3.34	11.4	18 53.6	16 35.5	+5 20.1	+0.5554	0.5734	0.0161	+53	-3
85 B. Sagittarii	6.0	3.32	12.0	17 50.7	19 29.7	+8 8.2	-0.5039	0.5726	0.0212	-10	-69
95 B. Sagittarii	5.7	+3.34	+12.0	-18 46.6	20 28.6	+9 5.0	+0.5078	0.5724	+0.0230	+50	-6
100 B. Sagittarii	5.0	3.33	12.2	18 27.2	21 1.8	+9 37.1	+0.1782	0.5722	0.0239	+28	-24
187 B. Sagittarii	6.4	3.32	14.6	18 51.3	8 12 56.2	+0 58.2	+1.2099	0.5671	0.0511	+72	+50
$\rho$ Sagittarii	4.0	3.28	15.5	17 59.5	19 31.0	+7 19.6	+0.6567	0.5646	0.0617	+66	+3
45 Sagittarii	6.0	3.29	15.5	18 27.0	19 35.1	+7 23.5	+1.1534	0.5646	0.0619	+72	+41
54 Sagittarii	5.4	+3.22	+16.5	-16 28.1	9 4 14.3	-8 14.7	-0.3818	0.5610	+0.0753	+2	-59
e Sagittarii	5.2	3.22	16.6	16 18.2	5 4.0	-7 26.7	-0.4972	0.5607	0.0765	-4	-68
283 B. Sagittarii	5.5	3.21	16.6	15 38.8	5 33.1	-6 58.6	-1.1670	0.5605	0.0772	-51	-90
g Sagittarii	5.1	3.18	17.3	15 41.7	12 13.2	-0.31.8	-0.5705	0.5576	0.0869	-8	-75
16 B. Capricorni	6.2	3.11	18.3	15 1.6	22 56.7	+9 50.7	-0.2831	0.5527	0.1015	+10	-52
$\beta$ Capricorni	3.2	+3.11	+18.3	-15 1.4	23 3.4	+9 57.1	-0.2751	0.5527	+0.1017	+10	-52
31 B. Capricorni	6.4	3.10	18.7	15 59.7	10 2 42.7	-10 30.8	+1.1599	0.5510	0.1063	+75	+40
27 G. Capricorni	6.2	3.08	18.7	15 18.8	3 50.4	-9 25.3	+0.5402	0.5505	0.1077	+60	-4
45 B. Capricorni	6.1	3.07	18.7	13 59.1	5 20.7	-7 57.8	-0.7391	0.5498	0.1096	-15	-90
$\tau$ Capricorni	5.2	3.06	19.0	15 13.4	7 46.1	-5 37.1	+0.8769	0.5487	0.1125	+75	+16
84 B. Capricorni	6.0	+3.01	+19.1	-12 49.7	13 18.4	-0 15.4	-1.0896	0.5461	+0.1189	-39	-90
$\nu$ Aquarii	4.5	2.94	19.4	11 41.0	22 33.1	+8 41.9	-1.1976	0.5419	0.1288	-48	-90
53 B. Aquarii	6.5	2.92	19.8	13 31.2	11 41.6	+11 44.5	+1.2214	0.5405	0.1319	+77	+47
72 B. Aquarii	6.5	2.87	19.7	11 54.1	7 47.5	-6 20.9	+0.2716	0.5378	0.1376	+46	-19
137 B. Capricorni	6.2	2.82	19.7	10 55.4	13 26.3	-0 52.4	-0.0102	0.5355	0.1425	+30	-35
e <sup>1</sup> Capricorni	5.3	+2.80	+19.5	-9 26.1	16 14.7	+1 50.9	-1.2400	0.5342	+0.1447	-51	-90

## 494 ELEMENTS OF OCCULTATIONS, 1922.

JULY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0	Apparent Declina- tion.		Greenwich Mean Time.	Hour Angle, H	$\gamma$	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
c <sup>2</sup> Capricorni	6.3	+2.79	+19.5	- 9 37.9	11 16 53.1	+ 2 28.1	-0.9330	0.5340	+0.1452	-23	-90
96 B. Aquarii	6.5	2.76	19.8	10 40.4	20 35.7	+ 6 4.0	+0.7570	0.5325	+0.1481	+80	+ 8
0 Aquarii	4.3	2.67	19.2	8 10.0	12 8 31.4	- 6 21.6	-0.1869	0.5282	+0.1560	+22	-46
150 B. Aquarii	6.0	2.66	19.5	9 25.4	8 32.7	- 6 20.3	+1.2018	0.5282	0.1560	+81	+42
2 Aquarii	5.3	2.65	19.2	8 12.5	10 16.1	- 4 39.9	+0.1318	0.5277	0.1570	+40	-27
170 B. Aquarii	6.0	+2.64	+19.1	- 7 35.0	12 0.2	- 2 58.9	-0.2834	0.5270	+0.1580	+17	-52
185 B. Aquarii	6.1	2.61	18.8	6 56.9	16 2.3	+ 0 56.0	-0.3422	0.5258	+0.1602	+14	-55
67 Aquarii	6.4	2.55	18.8	7 22.0	22 16.7	+ 6 59.6	+1.1285	0.5240	+0.1632	+83	+34
252 B. Aquarii	5.8	2.50	18.1	5 23.9	13 43.0	-10 54.1	-0.0119	0.5225	0.1657	+33	-35
197 G. Aquarii	6.3	2.49	18.0	5 13.3	5 40.7	- 9 49.4	-0.0222	0.5222	0.1661	+32	-36
263 B. Aquarii	6.1	+2.48	+17.9	- 5 7.6	7 55.1	- 7 38.8	+0.2443	0.5217	+0.1669	+48	-21
293 B. Aquarii	5.5	2.42	17.2	3 55.0	15 21.7	- 0 25.1	+0.1573	0.5203	+0.1691	+43	-26
316 B. Aquarii	6.5	2.40	17.2	4 20.4	17 50.4	+ 1 59.3	+1.0448	0.5199	+0.1697	+86	+27
13 Piscium	6.4	2.36	16.1	1 30.7	14 0 5.0	+ 8 3.4	-1.0218	0.5191	0.1709	-26	-90
14 Piscium	5.9	2.35	16.1	1 40.4	1 14.8	+ 9 11.1	-0.6439	0.5190	0.1711	- 1	-81
60 B. Piscium	6.0	+2.26	+15.0	- 0 19.2	12 15.8	- 4 6.7	-0.2518	0.5183	+0.1720	+21	-50
98 B. Piscium	6.3	2.17	13.5	+ 1 15.5	15 03.6	+ 7 49.0	+0.1120	0.5185	+0.1717	+41	-28
44 Piscium	6.0	2.14	13.1	1 30.7	4 36.1	+11 45.7	+0.5285	0.5188	+0.1712	+69	- 5
147 B. Piscium	5.9	2.09	10.3	4 53.0	16 45.2	- 0 26.1	-1.1289	0.5204	0.1688	-34	-86
155 B. Piscium	6.5	2.03	11.4	2 57.9	18 20.3	+ 1 6.2	+1.2549	0.5207	0.1683	+90	+50
73 Piscium	6.2	+1.99	+10.0	+ 5 14.5	16 1 28.6	+ 8 2.1	-0.0622	0.5221	+0.1660	+31	-37
77 Piscium	6.4	1.98	10.1	4 29.8	1 58.5	+ 8 31.2	+0.8412	0.5223	+0.1658	+90	+14
e Piscium	5.6	1.96	9.7	5 14.4	3 19.3	+ 9 49.6	+0.2446	0.5226	+0.1654	+49	-19
88 Piscium	6.2	1.96	9.0	6 35.1	6 37.2	-10 58.2	-0.6928	0.5234	0.1641	- 4	-83
263 B. Piscium	6.4	1.91	7.9	7 33.6	13 43.2	- 4 4.6	-0.6091	0.5255	0.1668	+ 1	-74
0 Piscium	4.5	+1.84	+ 6.6	+ 8 46.0	22 28.7	+ 4 25.3	-0.5432	0.5285	+0.1562	+ 5	-68
5 Arietis	5.5	1.67	3.8	10 15.5	17 18 20.7	- 0 18.9	+0.7964	0.5371	+0.1420	+90	+14
31 Arietis	5.7	1.65	2.4	12 6.6	18 0 8.6	+ 5 18.2	-0.4051	0.5401	+0.1369	+12	-54
38 Arietis	5.2	1.61	2.0	12 7.1	4 13.2	+ 9 15.2	+0.1368	0.5423	+0.1331	+43	-22
147 B. Arietis	5.8	1.51	+ 0.5	12 53.2	14 32.8	- 4 44.9	+0.6269	0.5480	0.1225	+80	+ 7
30 B. Tauri	6.4	+1.40	- 1.9	+15 10.5	19 5 16.0	+ 9 29.5	-0.1496	0.5567	+0.1050	+26	-34
33 B. Tauri	6.3	1.41	2.3	16 17.0	6 0.4	+10 12.4	-1.2550	0.5572	+0.1040	-54	-74
162 B. Tauri	6.3	1.32	3.6	17 4.6	15 40.8	- 4 26.8	-1.1485	0.5631	0.0908	-40	-73
180 B. Tauri	6.1	1.28	4.0	17 7.9	19 0.2	- 1 14.2	-0.9110	0.5651	0.0860	-20	-73
193 B. Tauri	6.2	1.26	4.2	17 4.6	21 2.0	+ 0 43.4	-0.6809	0.5664	0.0830	- 4	-70
8 Tauri	3.9	+1.22	- 4.8	+17 21.6	20 1 39.8	+ 5 11.5	-0.6098	0.5692	+0.0759	0	-63
63 Tauri	5.7	1.21	4.6	16 35.7	1 53.3	+ 5 24.5	+0.2134	0.5693	+0.0755	+48	-10
64 Tauri	4.9	1.22	4.8	17 15.8	2 10.8	+ 5 41.5	-0.4691	0.5695	+0.0751	+ 8	-52
68 Tauri	4.3	1.21	5.0	17 45.0	2 47.4	+ 6 16.8	-0.9359	0.5699	+0.0741	-22	-73
70 Tauri	6.4	1.19	4.4	15 45.8	2 52.4	+ 6 21.6	+1.1645	0.5699	0.0740	+90	+51
75 Tauri	5.2	+1.18	- 4.7	+16 11.1	4 7.0	+ 7 33.6	+0.8094	0.5707	+0.0720	+90	+23
0 <sup>1</sup> Tauri	4.2	1.17	4.6	15 47.3	4 10.6	+ 7 37.1	+1.2309	0.5707	+0.0719	+90	+60
264 B. Tauri	4.8	1.17	4.7	16 1.4	5 3.0	+ 8 27.6	+1.0448	0.5712	+0.0705	+90	+40
119 H <sup>1</sup> Tauri	6.2	1.18	5.4	17 51.1	6 20.6	+ 9 42.4	-0.7886	0.5720	0.0684	-11	-73
275 B. Tauri	6.5	1.15	4.9	16 9.6	6 24.2	+ 9 46.0	+0.9956	0.5720	0.0683	+90	+37
a Tauri (Ald.)	1.1	+1.15	- 5.1	+16 21.1	7 24.0	+10 43.6	+0.8596	0.5726	+0.0667	+90	+27
302 B. Tauri	6.1	1.13	6.1	18 35.6	11 53.3	- 8 56.5	-1.2095	0.5752	0.0593	-49	-72
i Tauri	5.1	1.11	6.3	18 42.4	14 5.6	- 6 49.0	-1.2000	0.5765	0.0555	-47	-72
318 B. Tauri	5.7	1.06	6.2	17 1.8	16 42.5	+ 4 17.8	+0.6926	0.5780	0.0510	+90	+19
m Tauri	5.0	1.06	6.9	18 32.4	20 59.2	- 0 10.4	-0.6802	0.5803	0.0435	- 4	-67
111 Tauri	5.1	+0.97	- 7.3	+17 18.6	21 4 13.2	+ 6 47.9	+0.8654	0.5841	+0.0303	+90	+31

# ELEMENTS OF OCCULTATIONS, 1922. 495

JULY.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, <i>H</i>	<i>F</i>	<i>z'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
115 Tauri	5.3	+0.95	-7.5	+17 53.7	21 5 22.7	+7 54.9	+0.2928	0.5846	+0.0282	+52	-2
117 Tauri	6.0	0.94	7.4	17 10.4	5 44.9	+8 16.2	+1.0510	0.5848	0.0275	+90	+45
119 Tauri	4.9	0.94	7.8	18 32.1	7 29.4	+9 56.8	-0.3161	0.5857	0.0242	+17	-37
120 Tauri	5.6	0.94	7.8	18 29.0	8 2.5	+10 28.7	-0.2494	0.5859	0.0232	+20	-32
130 Tauri	5.6	0.88	8.1	17 41.9	13 51.7	-7 55.0	+0.6637	0.5886	+0.0121	+88	+20
19 B. Geminorum	6.2	+0.80	-9.0	+18 42.0	22 0 38.1	+2 27.0	-0.3495	0.5928	-0.0091	+15	-37
NEW MOON.											
43 Leonis	6.3	+0.72	-9.3	+6 56.2	26 6 21.6	+4 17.3	+1.0028	0.5865	-0.1748	+90	+26
48 Leonis	5.2	0.74	8.8	7 21.2	11 19.2	+9 4.0	-0.2871	0.5851	0.1786	+19	-50
35 Sextantis	6.1	+0.79	-9.1	+5 9.3	14 56.0	-11 27.2	+1.2459	0.5840	-0.1811	+90	+49
37 Sextantis	6.3	0.78	8.7	6 46.9	16 5.4	-10 20.4	-0.5798	0.5837	0.1818	+3	-72
56 Leonis	6.1	0.82	8.4	6 36.0	20 18.1	-6 17.0	-1.1700	0.5825	0.1842	-38	-84
d Leonis	5.0	0.86	8.9	4 2.0	22 14.3	-4 24.9	+1.0221	0.5820	0.1852	+90	+26
75 Leonis	5.4	0.93	8.8	2 26.2	27 5 22.9	+2 28.0	+1.2771	0.5801	0.1881	+90	+53
79 Leonis	5.5	+0.96	-8.6	+1 50.0	8 16.7	+5 15.5	+1.3321	0.5793	-0.1890	+79	+65
80 Leonis	6.4	0.94	7.9	4 17.2	9 2.8	+6 0.0	-1.2559	0.5791	0.1892	-48	-86
83 Leonis	6.3	0.93	8.0	3 26.2	9 28.1	+6 24.4	-0.4881	0.5790	0.1893	+8	-66
$\tau$ Leonis	5.2	0.97	8.1	3 17.0	9 56.9	+6 52.1	-0.4273	0.5789	0.1894	+11	-61
89 Leonis	5.7	0.98	7.8	3 29.5	12 43.3	+9 32.5	-1.1606	0.5782	0.1900	-37	-87
9 B. Virginis	6.2	+1.08	-8.2	+0 6.8	19 3.0	-8 21.5	+1.0026	0.5768	-0.1907	+90	+24
$\beta$ Virginis	3.8	1.10	7.7	2 12.1	19 44.3	-7 41.7	-1.2136	0.5766	0.1908	-43	-88
27 B. Virginis	6.5	1.12	7.5	+0 57.7	23 23.5	-4 10.3	-0.6738	0.5759	0.1908	-3	-85
13 Virginis	5.9	1.24	7.0	-0 21.3	28 7 54.8	+4 2.9	-0.9802	0.5743	0.1897	-21	-90
$\eta$ Virginis	4.0	1.24	7.0	0 14.1	8 27.3	+4 34.3	-1.2036	0.5741	0.1896	-42	-90
38 Virginis	6.1	+1.44	-6.2	-3 7.9	23 0.3	-5 23.6	-1.0286	0.5724	-0.1844	-26	-90
JUPITER	-1.4	..	..	3 58.3	23 0.3	-5 23.6	-0.1835	0.5674	0.1822	+24	-45
91 G. Virginis	6.5	1.46	6.5	3 48.1	23 11.3	-5 13.0	-0.3876	0.5724	0.1844	+13	-59
k Virginis	5.7	1.48	6.0	3 23.6	29 1 50.0	-2 40.0	-1.2856	0.5721	0.1830	-54	-90
$\theta$ Virginis	4.4	1.56	6.1	5 7.5	6 20.5	+1 41.0	-0.3608	0.5717	0.1804	+14	-57
72 Virginis	6.1	+1.70	-5.2	-6 4.2	15 19.8	+10 21.3	-1.0023	0.5713	-0.1741	-26	-90
m Virginis	5.2	1.79	5.4	8 18.7	20 14.3	-8 54.5	+0.4244	0.5712	0.1701	+59	-11
575 B. Virginis	6.2	1.84	5.4	9 19.2	22 41.7	-6 32.3	+1.0342	0.5711	0.1680	+81	+27
598 B. Virginis	6.1	1.85	4.4	7 40.6	30 2 7.0	-3 14.2	-1.2057	0.5711	0.1648	-45	-90
623 B. Virginis	6.5	1.94	4.2	8 53.1	6 13.7	+0 43.8	-0.6479	0.5711	0.1608	-4	-82
95 Virginis	5.4	+1.94	-4.0	-8 56.6	7 16.0	+1 44.0	-0.7551	0.5711	-0.1598	-11	-90
96 Virginis	6.5	1.98	4.3	9 58.0	8 15.8	+2 41.7	+0.1300	0.5712	0.1587	+39	-27
$\kappa$ Virginis	4.3	2.00	3.9	9 54.7	9 58.2	+4 20.5	-0.1949	0.5712	0.1569	+20	-46
2 Libræ	6.3	2.09	3.9	11 21.6	14 35.1	+8 47.6	+0.5712	0.5713	0.1519	+68	-3
4 G. Libræ	6.5	2.10	3.8	11 19.0	15 8.3	+9 19.7	+0.4440	0.5713	0.1512	+57	-10
6 B. Libræ	6.2	+2.15	-2.9	-11 58.5	20 34.1	-9 26.0	+0.3145	0.5715	-0.1449	+48	-17
22 B. Libræ	6.4	2.26	2.7	12 30.8	31 1 18.9	-4 51.3	+0.1933	0.5717	0.1389	+41	-24
13 Libræ	5.7	2.27	1.8	11 34.9	4 9.7	-2 6.5	-1.1552	0.5719	0.1353	-44	-90
o Libræ	6.2	2.50	-1.2	15 16.1	15 47.0	+9 6.2	+1.1659	0.5725	0.1193	+75	+41
$\gamma$ Libræ	4.0	+2.57	+0.1	-14 31.8	22 7.8	-8 46.5	-0.3247	0.5729	-0.1099	+8	-55

AUGUST.

190 B. Libræ	6.5	+2.61	+0.6	-14 47.6	1 1 34.5	-5 27.1	-0.4212	0.5730	-0.1047	+3	-62
$\eta$ Libræ	5.5	2.63	0.4	15 25.5	1 51.4	-5 10.8	+0.2050	0.5731	0.1042	+37	-23
$\theta$ Libræ	4.4	+2.71	+0.9	-16 30.1	6 5.8	-1 5.4	+0.8964	0.5732	-0.0976	+74	+18

## 496 ELEMENTS OF OCCULTATIONS, 1922.

AUGUST.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
203 B. Libræ	6.2	+2.68	+ 1.7	14 36.1	d h m	h m	-1.1988	0.5732	-0.0957	-53	-90
49 Libræ	5.4	2.71	1.2	16 18.2	1 7 18.8	+ 0 5.0	+0.4184	0.5733	0.0931	+50	-11
$\varphi$ Ophiuchi	4.4	2.89	3.8	16 26.6	8 58.0	+ 1 40.7	-0.5395	0.5735	0.0709	- 7	-72
24 Scorpïi	5.0	2.97	4.2	17 35.5	22 23.4	- 9 22.4	+0.3607	0.5735	0.0632	+43	-14
78 B. Ophiuchi	6.5	3.01	5.7	16 40.9	2 25.8	- 4 59.6	-0.9616	0.5733	0.0523	-36	-90
90 B. Ophiuchi	6.5	+3.06	+ 5.4	-18 7.6	9 15.5	+ 1 6.6	+0.4787	0.5733	-0.0494	+50	- 7
29 Ophiuchi	6.4	3.08	5.5	18 46.2	10 51.8	+ 2 39.6	+1.1125	0.5732	0.0478	+72	+37
125 B. Ophiuchi	6.2	3.08	6.4	17 30.3	11 46.9	+ 3 32.7	-0.3490	0.5730	0.0429	0	-57
164 B. Ophiuchi	6.0	3.12	7.3	17 40.4	14 35.8	+ 6 15.0	-0.3675	0.5726	0.0339	- 2	-58
192 B. Ophiuchi	6.3	3.16	7.4	18 22.3	19 41.9	+11 10.9	+0.3051	0.5724	0.0302	+36	-17
305 B. Ophiuchi	6.3	+3.27	+ 9.8	-18 47.2	21 45.8	-10 49.5	+0.4987	0.5706	-0.0058	+48	- 6
6 Sagittarii	6.5	3.25	10.6	17 9.1	3 11 33.2	+ 2 28.8	-1.2508	0.5703	-0.0015	-69	-85
32 G. Sagittarii	5.7	3.27	11.1	17 9.8	14 0.0	+ 4 50.5	-1.2371	0.5697	+0.0035	-66	-89
64 B. Sagittarii	6.1	3.32	11.3	18 41.0	16 51.3	+ 7 35.9	+0.4062	0.5691	0.0095	+41	-11
6 B. Scuti	5.9	3.30	11.7	17 23.9	20 15.2	+10 52.6	-0.9583	0.5689	0.0108	-39	-90
52 G. Sagittarii	6.4	+3.32	+11.5	-18 29.4	21 1.3	+11 37.2	+0.2083	0.5689	+0.0110	+29	-23
17 H <sup>1</sup> . Sagittarii	6.4	3.33	11.6	18 38.8	21 7.9	+11 43.5	+0.3834	0.5688	0.0120	+40	-13
Y Sagit. (var.)	5.4	3.34	11.7	18 53.6	21 41.0	-11 44.5	+0.6609	0.5686	0.0140	+63	+ 3
85 B. Sagittarii	6.0	3.34	12.4	17 50.7	22 52.1	-10 35.8	-0.4100	0.5679	0.0191	- 5	-62
95 B. Sagittarii	5.7	3.36	12.3	18 46.5	4 1 48.9	- 7 45.1	+0.6056	0.5677	0.0208	+58	0
100 B. Sagittarii	5.0	+3.35	+12.5	-18 27.2	2 48.6	- 6 47.5	+0.2731	0.5675	+0.0218	+34	-19
e Sagittarii	4.0	3.42	16.1	17 59.4	3 22.3	- 6 14.9	+0.7094	0.5612	0.0593	+71	+ 6
45 Sagittarii	6.0	3.43	15.9	18 27.0	2 9.5	- 8 14.3	+1.2085	0.5612	0.0594	+72	+49
54 Sagittarii	5.4	3.41	17.4	16 28.1	2 13.6	- 8 10.4	-0.3522	0.5581	0.0728	+ 3	-57
e Sagittarii	5.2	3.41	17.6	16 18.2	10 58.6	+ 0 17.1	-0.4698	0.5578	0.0741	- 3	-66
283 B. Sagittarii	5.5	+3.40	+17.6	-15 38.8	11 48.8	+ 1 5.6	-1.1440	0.5577	+0.0748	-49	-90
g Sagittarii	5.1	3.40	18.4	15 41.6	12 18.2	+ 1 34.0	-0.5581	0.5552	0.0845	- 7	-74
16 B. Capricorni	6.2	3.39	19.6	15 1.6	19 2.2	+ 8 4.7	-0.2914	0.5511	0.0992	+ 9	-53
$\beta$ Capricorni	3.2	3.39	19.6	15 1.4	5 50.8	- 5 27.7	-0.2836	0.5511	0.0993	+10	-52
31 B. Capricorni	6.4	3.40	19.9	15 59.7	5 57.6	- 5 21.1	+1.1497	0.5496	0.1040	+75	+39
27 G. Capricorni	6.2	+3.38	+20.0	-15 18.8	9 38.4	- 1 47.4	+0.5252	0.5492	+0.1055	+60	- 5
45 B. Capricorni	6.1	3.37	20.3	13 59.1	10 46.5	- 0 41.5	-0.7622	0.5486	0.1073	-16	-90
$\tau$ Capricorni	5.2	3.38	20.4	15 13.4	12 17.4	+ 0 46.5	+0.8549	0.5476	0.1103	+75	+15
84 B. Capricorni	6.0	3.35	20.9	12 49.7	14 43.6	+ 3 8.0	-1.1299	0.5454	0.1168	-42	-90
v Aquarii	4.5	3.32	21.5	11 40.9	20 17.5	+ 8 31.3	-1.2566	0.5419	0.1268	-57	-90
53 B. Aquarii	6.5	+3.32	+21.7	-13 31.2	7 5 34.3	- 6 29.3	+1.1634	0.5406	+0.1300	+77	+40
72 B. Aquarii	6.5	3.28	22.0	11 54.0	8 43.4	- 3 26.1	+0.1986	0.5383	0.1358	+41	-24
137 B. Capricorni	6.2	3.26	22.2	10 55.3	14 50.0	+ 2 29.2	-0.0951	0.5362	0.1408	+24	-40
c <sup>2</sup> Capricorni	6.3	3.25	22.2	9 37.8	20 29.1	+ 7 58.1	-1.0266	0.5350	0.1436	-30	-90
$\lambda$ Capricorni	5.5	3.25	22.3	11 43.2	23 56.0	+11 18.6	+1.2904	0.5349	0.1437	+79	+57
96 B. Aquarii	6.5	+3.24	+22.4	-10 40.4	8 0 2.9	+11 25.3	+0.6601	0.5337	+0.1465	+76	+ 2
$\theta$ Aquarii	4.3	3.18	22.3	8 10.0	3 38.7	- 9 5.4	-0.3077	0.5297	0.1547	+15	-53
150 B. Aquarii	6.0	3.18	22.4	9 25.4	15 33.9	+ 2 28.5	+1.0837	0.5297	0.1548	+81	+31
e Aquarii	5.3	3.17	22.3	8 12.4	15 35.2	+ 2 29.8	+0.0085	0.5293	0.1558	+33	-44
170 B. Aquarii	6.0	3.16	22.3	7 35.0	17 18.4	+ 4 9.9	-0.4106	0.5287	0.1568	+10	-60
186 B. Aquarii	6.1	+3.15	+22.1	- 6 56.9	19 2.4	+ 5 50.8	-0.4765	0.5275	+0.1591	+ 7	-65
67 Aquarii	6.4	3.11	22.2	7 21.9	23 4.1	+ 9 45.4	+0.9863	0.5258	0.1621	+83	+23
252 B. Aquarii	5.8	3.09	21.8	5 23.8	9 5 17.8	- 8 11.7	-0.1663	0.5243	0.1648	+24	-44
197 G. Aquarii	6.3	3.08	21.7	5 13.3	11 34.3	- 2 6.2	-0.1784	0.5241	0.1652	+24	-45
263 B. Aquarii	6.1	3.07	21.7	5 7.5	12 40.9	- 1 1.5	+0.0851	0.5236	0.1660	+39	-30
293 B. Aquarii	5.5	+3.03	+21.2	- 3 55.0	14 55.0	+ 1 8.8	-0.0131	0.5221	+0.1682	+33	-35

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THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922·0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		Δα	Δδ								
		s	"	° ' "	d h m	h m				°	' "
316 B. Aquarii	6·5	+3·03	+21·1	- 0 20·3	10 0 49·2	+10 45·7	+0·8724	0·5217	+0·1689	+86	+15
13 Piscium	6·4	3·00	20·4	1 30·7	7 3·2	- 7 10·9	-1·2067	0·5208	0·1701	-43	-90
14 Piscium	5·9	3·00	20·3	1 40·4	8 12·9	- 6 3·3	-0·8296	0·5207	0·1703	-13	-90
60 B. Piscium	6·0	2·94	19·3	0 19·2	19 13·4	+ 4 38·5	-0·4502	0·5196	0·1713	+10	-63
80 B. Piscium	6·3	2·90	19·1	- 0 55·8	11 0 42·9	+ 9 58·6	+1·1697	0·5194	0·1714	+90	+38
98 B. Piscium	6·3	+2·88	+18·1	+ 1 15·6	7 30·7	- 7 25·2	-0·0982	0·5193	+0·1710	+29	-40
44 Piscium	6·0	2·85	17·7	1 30·8	11 34·6	- 3 28·4	+0·3159	0·5194	0·1705	+54	-17
155 B. Piscium	6·5	2·77	16·0	2 58·0	12 1 21·8	+ 9 55·3	+1·0353	0·5204	0·1675	+90	+27
73 Piscium	6·2	2·75	14·7	5 14·6	8 32·6	- 7 6·3	-0·2915	0·5214	0·1652	+18	-51
77 Piscium	6·4	2·73	14·8	4 29·9	9 2·6	- 6 37·1	+0·6160	0·5215	0·1650	+78	0
e Piscium	5·6	+2·72	+14·4	+ 5 14·5	10 24·0	- 5 18·1	+0·0159	0·5217	+0·1645	+35	-33
88 Piscium	6·2	2·73	13·8	6 35·2	13 43·3	- 2 4·5	-0·9278	0·5223	0·1632	-19	-84
263 B. Piscium	6·4	2·69	12·7	7 33·7	20 52·9	+ 4 52·6	-0·8465	0·5238	0·1599	-14	-83
μ Piscium	5·0	2·66	13·1	5 44·8	21 49·8	+ 5 47·9	+1·3090	0·5240	0·1594	+84	+61
o Piscium	4·5	2·64	11·3	8 46·1	13 5 44·0	-10 31·8	-0·7826	0·5261	0·1551	-10	-82
ξ Arietis	5·5	+2·48	+ 8·2	+10 15·6	14 1 52·7	+ 9 0·8	+0·5674	0·5330	+0·1409	+74	+ 1
25 Arietis	6·5	2·45	8·1	9 51·3	3 11·5	+10 17·2	+1·1949	0·5336	0·1398	+90	+46
31 Arietis	5·7	2·48	6·8	12 6·7	7 46·6	- 9 16·0	-0·6422	0·5355	0·1358	- 1	-73
38 Arietis	5·2	2·43	6·2	12 7·2	11 55·6	- 5 14·6	-0·0943	0·5373	0·1321	+29	-35
147 B. Arietis	5·8	2·34	4·5	12 53·3	22 27·4	+ 4 57·5	+0·4052	0·5422	0·1216	+60	- 6
30 B. Tauri	6·4	+2·22	+ 1·6	+15 10·6	15 13 30·1	- 4 28·8	-0·3686	0·5500	+0·1042	+14	-48
179 B. Tauri	5·9	2·06	- 0·2	14 57·3	16 3 27·4	+ 9 1·1	+1·1942	0·5576	0·0857	+90	+53
180 B. Tauri	6·1	2·10	1·0	17 7·9	3 34·0	+ 9 7·4	-1·1255	0·5577	0·0856	-38	-73
193 B. Tauri	6·2	2·07	1·3	17 7·4	5 38·7	+11 7·9	-0·8911	0·5589	0·0826	-18	-73
48 Tauri	6·3	2·02	0·8	15 12·4	7 9·3	-11 24·5	+1·2303	0·5597	0·0805	+90	+59
γ Tauri	3·9	+2·01	- 1·2	+15 26·4	8 59·2	- 9 38·3	+1·1247	0·5608	+0·0778	+90	+47
δ Tauri	3·9	2·03	2·0	17 21·6	10 23·4	- 8 17·0	-0·8144	0·5615	0·0757	-13	-73
63 Tauri	5·7	2·01	1·8	16 35·8	10 37·2	- 8 3·7	+0·0173	0·5617	0·0754	+35	-22
64 Tauri	4·9	2·02	2·1	17 15·8	10 55·1	- 7 46·3	-0·6718	0·5619	0·0749	- 4	-69
68 Tauri	4·3	2·02	2·3	17 45·0	11 32·6	- 7 10·1	-1·1425	0·5622	0·0740	-40	-73
70 Tauri	6·4	+1·98	- 1·7	+15 45·8	11 37·8	- 7 51·1	+0·9790	0·5622	+0·0738	+90	+35
75 Tauri	5·2	1·97	1·9	16 11·1	12 54·2	- 5 51·3	+0·6215	0·5630	0·0719	+81	+12
θ <sup>1</sup> Tauri	4·2	1·97	1·8	15 47·4	12 58·0	- 5 47·6	+1·0474	0·5631	0·0718	+90	+40
θ <sup>2</sup> Tauri	3·6	1·97	1·8	15 41·9	13 0·4	- 5 45·2	+1·1472	0·5630	0·0718	+90	+49
264 B. Tauri	4·8	1·96	2·0	16 1·5	13 51·6	- 4 55·8	+0·8604	0·5635	0·0705	+90	+27
85 Tauri	6·0	+1·95	- 2·0	+15 41·1	14 27·1	- 4 21·5	+1·2628	0·5638	+0·0696	+84	+66
119 H <sup>1</sup> Tauri	6·2	1·98	2·8	17 51·1	15 11·1	- 3 39·1	-0·9897	0·5642	0·0684	-26	-73
275 B. Tauri	6·5	1·94	2·2	16 9·6	15 14·8	- 3 35·5	+0·8122	0·5643	0·0683	+90	+25
α Tauri (Ald.)	1·1	1·94	2·6	16 21·2	16 16·1	- 2 36·3	+0·6760	0·5649	0·0668	+89	+16
89 Tauri	5·8	1·92	2·4	15 52·6	17 16·7	- 1 37·8	+1·2465	0·5654	0·0652	+88	+63
318 B. Tauri	5·7	+1·83	- 3·9	+17 1·9	17 1 48·4	+ 6 36·1	+0·5184	0·5702	+0·0514	+70	+ 8
m Tauri	5·0	1·82	4·9	18 32·4	6 11·3	+10 49·7	-0·8619	0·5725	0·0440	-17	-72
111 Tauri	5·1	1·70	5·5	17 18·6	13 35·6	- 6 1·9	+0·7076	0·5765	0·0312	+90	+21
115 Tauri	5·3	1·68	5·8	17 53·7	14 46·7	- 4 53·2	+0·1315	0·5771	0·0290	+42	-11
117 Tauri	6·0	1·67	5·7	17 10·4	15 9·4	- 4 31·3	+0·8970	0·5773	0·0284	+90	+34
119 Tauri	4·9	+1·67	- 6·2	+18 32·1	16 56·3	- 2 48·3	-0·4797	0·5782	+0·0251	+ 7	-48
167 H <sup>1</sup> Tauri	5·5	1·65	5·8	17 0·0	16 58·2	- 2 46·4	+1·1259	0·5782	0·0250	+90	+52
120 Tauri	5·6	1·66	6·3	18 29·0	17 30·2	- 2 15·6	-0·4117	0·5785	0·0241	+11	-43
122 Tauri	5·5	1·62	6·0	16 59·5	19 2·2	- 0 47·0	+1·1808	0·5792	0·0214	+90	+58
130 Tauri	5·6	1·57	6·7	17 42·0	23 27·1	+ 3 28·4	+0·5176	0·5814	+0·0133	+70	+12
19 B. Geminorum	6·2	+1·46	- 8·1	+18 42·0	18 10 26·6	- 9 56·4	-0·4870	0·5862	-0·0075	+ 7	-47

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THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	° ' "	d h m	h m				°	°
124 H <sup>1</sup> .Orionis	5.7	+1.44	-7.9	+17 55.6	18 10 50.4	-9 33.4	+0.3073	0.5864	-0.0082	+54	+1
71 Orionis	5.1	1.45	8.4	19 10.9	10 58.9	-9 25.3	-0.9887	0.5865	0.0085	-26	-71
B. D. +17° 1191	6.5	1.42	7.8	17 12.4	11 39.1	-8 46.6	+1.0436	0.5868	0.0008	+90	+46
287 B. Orionis	6.2	1.41	7.9	17 21.3	12 44.9	-7 43.2	+0.8779	0.5872	0.0119	+90	+34
292 B. Orionis	6.5	1.40	8.1	17 47.9	13 44.5	-6 45.8	+0.4069	0.5877	0.0138	+61	+6
B. D. +17° 1275	6.2	+1.35	-8.3	+16 59.5	17 47.9	-2 51.6	+1.1625	0.5891	-0.0217	+90	+56
26 Geminorum	5.2	1.30	8.9	17 43.2	22 26.0	+1 36.1	+0.2921	0.5908	0.0307	+53	-2
74 B. Geminorum	6.2	1.28	9.2	18 16.6	10 28.8	+3 34.2	-0.3440	0.5914	0.0347	+15	-39
110 B. Geminorum	6.2	1.21	9.4	17 51.9	6 39.2	+9 30.6	-0.1742	0.5933	0.0468	+24	-30
41 H <sup>1</sup> .Geminorum	6.0	1.20	9.2	16 47.1	6 43.2	+9 34.4	+0.9221	0.5933	0.0469	+90	+34
51 Geminorum	5.3	+1.15	-9.4	+16 17.4	11 8.6	-10 10.3	+1.1963	0.5945	-0.0555	+90	+57
λ Geminorum	3.6	1.13	9.6	16 40.8	13 3.9	-8 19.4	+0.6894	0.5949	0.0593	+90	+18
162 B. Geminorum	5.7	1.08	10.0	17 15.0	18 37.7	-2 58.3	-0.2496	0.5961	0.0700	+20	-36
68 Geminorum	5.2	1.07	9.7	15 59.6	19 22.6	-2 15.2	+0.9688	0.5962	0.0715	+90	+35
f Geminorum	5.3	1.06	10.2	17 51.0	21 44.0	+0 0.8	-1.0809	0.5966	0.0760	-34	-73
1 Cancri	6.0	+0.98	-10.1	+15 59.8	20 4 50.6	+6 51.0	+0.1907	0.5975	-0.0893	+47	-13
2 B. Cancri	6.0	0.98	10.2	16 43.6	5 27.2	+7 26.2	-0.5888	0.5976	0.0905	+1	-62
5 Cancri	5.9	0.97	10.2	+16 40.1	6 39.5	+8 35.7	-0.6400	0.5978	0.0927	-2	-67
NEW MOON.											
13 Virginis	5.9	+1.02	-5.8	-0 21.3	24 16 16.0	-9 48.1	-0.8359	0.5848	-0.1919	-13	-90
η Virginis	4.0	1.02	5.8	0 14.1	16 47.5	-9 17.7	-1.0552	0.5847	0.1918	-28	-90
38 Virginis	6.1	1.16	4.8	3 7.8	25 6 51.8	+4 15.6	-0.8061	0.5828	0.1868	-16	-90
91 G. Virginis	6.5	1.18	5.0	3 48.1	7 2.5	+4 26.0	-0.2348	0.5828	0.1866	+21	-48
k Virginis	5.7	1.20	4.6	3 23.6	9 36.0	+6 53.8	-1.1165	0.5825	0.1853	-34	-90
JUPITER	-1.3	...	...	-5 44.9	13 45.7	+10 54.4	+0.4553	0.5754	-0.1800	+62	-9
0 Virginis	4.4	+1.26	-4.5	5 7.5	13 57.7	+11 6.0	-0.2017	0.5820	0.1828	+22	-46
72 Virginis	6.1	1.37	3.7	6 4.1	22 39.8	-4 31.0	-0.8206	0.5812	0.1764	-14	-90
l Virginis	4.8	1.37	3.6	5 51.3	23 19.4	-3 52.8	-1.1574	0.5811	0.1759	-39	-90
m Virginis	5.2	1.44	3.7	8 18.7	26 3 25.2	+0 4.1	+0.5822	0.5808	0.1723	+71	-2
575 B. Virginis	6.2	+1.49	-3.7	-9 19.2	5 48.1	+2 21.8	+1.1846	0.5806	-0.1701	+81	+41
598 B. Virginis	6.1	1.50	2.8	7 40.6	9 7.2	+5 33.6	-1.0210	0.5803	0.1669	-28	-90
623 B. Virginis	6.5	1.57	2.6	8 53.0	13 6.8	+9 24.5	-0.4693	0.5800	0.1629	+6	-65
95 Virginis	5.4	1.57	2.5	8 56.5	14 7.3	+10 22.8	-0.5745	0.5800	0.1618	0	-74
96 Virginis	6.5	1.61	2.6	9 58.0	15 5.4	+11 18.8	+0.2987	0.5799	0.1607	+49	-18
κ Virginis	4.3	+1.63	-2.3	-9 54.7	16 45.0	-11 5.2	-0.0211	0.5798	-0.1589	+30	-36
2 Libræ	6.3	1.70	2.3	11 21.5	21 14.2	-6 45.8	+0.7364	0.5795	0.1537	+79	+7
4 G. Libræ	6.5	1.70	2.2	11 19.0	21 46.6	-6 14.5	+0.6111	0.5795	0.1531	+71	0
6 B. Libræ	6.2	1.74	1.4	11 58.5	27 3 3.9	-1 8.8	+0.4850	0.5792	0.1466	+60	-8
22 B. Libræ	6.4	1.85	1.2	12 30.8	7 41.7	+3 19.0	+0.3664	0.5790	0.1406	+51	-14
13 Libræ	5.7	+1.86	-0.4	-11 34.9	10 28.5	+5 59.7	-0.9657	0.5788	-0.1368	-28	-90
γ Libræ	4.0	2.15	+1.3	14 31.8	4 4.8	-11 2.0	-0.1462	0.5777	0.1111	+18	-43
190 B. Libræ	6.5	2.19	1.7	14 47.6	7 28.0	+2 13.8	-0.2426	0.5775	0.1057	+13	-49
η Libræ	5.5	2.21	1.5	15 25.5	7 44.7	+2 30.0	+0.3777	0.5775	0.1053	+48	-13
θ Libræ	4.4	2.29	1.9	16 30.1	11 55.2	+6 31.5	+1.0624	0.5772	0.0986	+74	+31
203 B. Libræ	6.2	+2.26	+2.7	-14 36.1	13 7.1	+7 40.8	-1.0152	0.5770	-0.0967	-35	-90
49 Libræ	5.4	2.28	2.1	16 18.2	14 44.9	+9 15.0	+0.5878	0.5769	0.0940	+63	-1
φ Ophiuchi	4.4	2.48	4.5	16 26.5	29 4 1.2	-1 57.1	-0.3684	0.5756	0.0717	+2	-58
24 Scorpīi	5.0	2.56	4.8	17 35.5	8 31.4	+2 23.3	+0.5242	0.5750	0.0639	+55	-5
78 B. Ophiuchi	6.5	2.62	6.2	16 40.9	14 48.6	+8 27.0	-0.7949	0.5741	0.0529	-25	-90
90 B. Ophiuchi	6.5	+2.66	+5.9	-18 7.6	16 24.4	+9 59.5	+0.6376	0.5739	-0.0501	+64	+2



# ELEMENTS OF OCCULTATIONS, 1922. 499

AUGUST.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	P	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
29 Ophiuchi	6.4	+2.68	+ 5.9	18 46.2	29 17 19.2	+10 52.3	+1.2681	0.5737	-0.0485	+72	+63
125 B. Ophiuchi	6.2	2.69	6.8	17 30.3	20 7.4	-10 25.5	-0.1887	0.5733	0.0436	+ 9	-46
164 B. Ophiuchi	6.0	2.75	7.6	17 40.4	30 1 12.6	- 5 31.0	-0.2107	0.5724	0.0346	+ 7	-47
192 B. Ophiuchi	6.3	2.79	7.7	18 22.3	3 16.3	- 3 31.7	+0.4581	0.5720	0.0310	+47	- 8
395 B. Ophiuchi	6.3	2.94	9.8	18 47.2	17 3.8	+ 9 46.8	+0.6413	0.5691	0.0067	+61	+ 2
6 Sagittarii	6.5	+2.92	+10.8	-17 9.1	19 30.9	-11 51.2	-1.1079	0.5685	-0.0024	-52	-90
32 G. Sagittarii	5.7	2.95	11.2	17 9.8	22 22.7	- 9 5.3	-1.0969	0.5678	+0.0026	-51	-90
64 B. Sagittarii	6.1	3.01	11.2	18 41.0	31 1 47.4	- 5 47.8	+0.5418	0.5669	0.0085	+52	- 4
6 B. Scuti	5.9	3.00	11.8	17 23.9	2 33.7	- 5 3.1	-0.8225	0.5667	0.0098	-30	-90
52 G. Sagittarii	6.4	3.02	11.4	18 29.4	2 40.3	- 4 56.8	+0.3432	0.5667	0.0100	+37	-15
17 H. Sagittarii	6.4	+3.03	+11.5	-18 38.9	3 13.6	- 4 24.7	+0.5178	0.5665	+0.0109	+50	- 5
Y Sagit. (var.)	5.4	3.04	11.6	18 53.6	4 24.9	- 3 15.7	+0.7941	0.5662	0.0130	+72	+12
85 B. Sagittarii	6.0	3.05	12.4	17 50.7	7 22.5	- 0 24.2	-0.2792	0.5654	0.0180	+ 2	-53
95 B. Sagittarii	5.7	3.08	12.2	18 46.5	8 22.6	+ 0 33.8	+0.7354	0.5651	0.0197	+72	+ 8
100 B. Sagittarii	5.0	+3.07	+12.4	-18 27.2	8 56.4	+ 1 6.5	+0.4023	0.5650	+0.0206	+42	-11

SEPTEMBER.

q Sagittarii	4.0	+3.23	+15.8	-17 59.5	1 7 53.0	- 0 43.4	+0.8164	0.5578	+0.0578	+72	+13
v Sagittarii	4.4	3.19	16.3	16 5.9	7 56.1	- 0 40.4	-1.2268	0.5578	0.0579	-60	-90
54 Sagittarii	5.4	+3.26	+17.3	-16 28.1	16 46.6	+ 7 52.5	-0.2572	0.5548	+0.0712	+ 8	-50
e Sagittarii	5.2	3.26	17.5	16 18.2	17 37.2	+ 8 41.5	-0.3760	0.5545	0.0724	+ 3	-59
283 B. Sagittarii	5.5	3.26	17.6	15 38.8	18 6.9	+ 9 10.2	-1.0522	0.5543	0.0731	-41	-90
g Sagittarii	5.1	3.28	18.4	15 41.6	2 05.4	- 8 15.7	-0.4731	0.5519	0.0828	- 2	-66
16 B. Capricorni	6.2	3.32	19.7	15 1.6	11 48.8	+ 2 17.6	-0.2189	0.5480	0.0973	+14	-48
$\beta$ Capricorni	3.2	+3.32	+19.7	-15 1.4	11 55.6	+ 2 24.3	-0.2111	0.5480	+0.0975	+14	-47
31 B. Capricorni	6.4	3.34	19.9	15 59.7	15 38.2	+ 5 59.8	-1.2215	0.5467	0.1022	+74	+49
27 G. Capricorni	6.2	3.34	20.1	15 18.8	16 47.0	+ 7 6.4	+0.5939	0.5462	0.1036	+65	- 1
45 B. Capricorni	6.1	3.33	20.6	13 59.1	18 18.6	+ 8 35.1	-0.6990	0.5457	0.1055	-13	-90
$\tau$ Capricorni	5.2	3.35	20.5	15 13.4	20 46.0	+10 57.8	+0.9196	0.5448	0.1084	+75	+20
84 B. Capricorni	6.0	+3.35	+21.3	-12 49.7	3 2 22.7	- 7 36.1	-1.0779	0.5428	+0.1149	-38	-90
$\nu$ Aquarii	4.5	3.36	22.2	11 40.9	11 43.6	+ 1 27.4	-1.2168	0.5396	0.1250	-51	-90
53 B. Aquarii	6.5	3.38	22.0	13 31.2	14 54.0	+ 4 31.9	+1.2058	0.5385	0.1282	+77	+45
72 B. Aquarii	6.5	3.37	22.7	11 54.0	21 3.0	+10 29.7	+0.2305	0.5365	0.1340	+43	-22
137 B. Capricorni	6.2	3.38	23.0	10 55.3	4 2 44.1	- 7 59.5	-0.0713	0.5347	0.1391	+26	-39
c <sup>1</sup> Capricorni	5.3	+3.37	+23.3	- 9 26.1	5 33.5	- 5 15.2	-1.3161	0.5339	+0.1414	-72	-73
c <sup>2</sup> Capricorni	6.3	3.38	23.3	9 37.8	6 12.1	- 4 37.8	-1.0097	0.5337	0.1420	-29	-90
96 B. Aquarii	6.5	3.38	23.3	10 40.4	9 55.8	- 1 0.8	+0.6766	0.5325	0.1450	+78	+ 3
$\theta$ Aquarii	4.3	3.38	23.7	8 9.9	21 53.8	+10 35.9	-0.3089	0.5293	0.1533	+15	-53
150 B. Aquarii	6.0	3.38	23.6	9 25.4	21 55.1	+10 37.2	+1.0856	0.5293	0.1533	+81	+31
q Aquarii	5.3	+3.38	+23.7	- 8 12.4	23 38.6	-11 42.4	+0.0057	0.5288	+0.1544	+32	-34
170 B. Aquarii	6.0	3.38	23.8	7 34.9	5 1 22.9	-10 1.2	-0.4163	0.5284	0.1555	+ 9	-61
186 B. Aquarii	6.1	3.39	23.7	6 56.8	5 25.2	- 6 6.0	-0.4874	0.5274	0.1578	+ 6	-66
67 Aquarii	6.4	3.38	23.8	7 21.9	11 39.6	- 0 2.5	+0.9705	0.5260	0.1610	+83	+22
252 B. Aquarii	5.8	3.37	23.7	5 23.8	17 56.5	+ 6 3.4	-0.1919	0.5248	0.1637	+23	-46
197 G. Aquarii	6.3	+3.37	+23.6	- 5 13.2	19 3.2	+ 7 8.2	-0.2052	0.5246	+0.1642	+22	-47
263 B. Aquarii	6.1	3.37	23.6	5 7.5	21 17.4	+ 9 18.6	+0.0560	0.5242	0.1650	+37	-31
293 B. Aquarii	5.5	3.36	23.4	3 54.9	4 43.2	- 7 28.4	-0.0511	0.5231	0.1674	+31	-37
316 B. Aquarii	6.5	3.37	23.3	4 20.3	7 11.6	- 5 4.3	+0.8333	0.5227	0.1681	+86	+13
13 Piscium	6.4	3.37	23.0	1 30.6	13 25.4	+ 0 58.8	-1.2562	0.5220	0.1695	-49	-90
14 Piscium	5.9	+3.37	+22.9	- 1 40.3	14 35.1	+ 2 6.5	-0.8798	0.5219	+0.1696	-16	-90

## 500 ELEMENTS OF OCCULTATIONS, 1922.

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name,	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	P	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	° ' "	d h m	h m				°	' "
60 B. Piscium	6.0	+3.35	+22.2	- 0 19.1	7 1 34.8	-11 12.6	-0.5113	0.5211	+0.1709	+ 6	-68
80 B. Piscium	6.3	3.34	21.8	- 0 55.8	7 3.8	- 5 53.0	+1.1057	0.5209	0.1709	+90	+32
98 B. Piscium	6.3	3.34	21.1	+ 1 15.7	13 51.0	+ 0 42.6	-0.1707	0.5210	0.1706	+25	-44
44 Piscium	6.0	3.33	20.7	1 30.8	17 54.7	+ 4 39.2	+0.2405	0.5210	0.1701	+49	-21
155 B. Piscium	6.5	3.30	19.3	2 58.0	8 7 41.1	- 5 57.8	+0.9504	0.5219	0.1672	+90	+21
73 Piscium	6.2	+3.31	+18.2	+ 5 14.6	14 51.8	+ 1 0.4	-0.3847	0.5227	+0.1649	+13	-57
77 Piscium	6.4	3.30	18.2	4 29.9	15 21.8	+ 1 29.6	+0.5248	0.5228	0.1647	+69	- 5
e Piscium	5.6	3.29	17.8	5 14.6	16 43.2	+ 2 48.6	-0.0778	0.5230	0.1642	+30	-38
88 Piscium	6.2	3.31	17.3	6 35.3	20 2.6	+ 6 2.3	-1.0264	0.5235	0.1629	-26	-84
263 B. Piscium	6.4	3.30	16.3	7 33.7	9 3 12.8	-11 0.0	-0.9497	0.5248	0.1595	-21	-83
$\mu$ Piscium	5.0	+3.27	+16.5	+ 5 44.8	4 9.8	-10 4.7	+1.2126	0.5249	+0.1591	+90	+45
o Piscium	4.5	3.28	14.9	8 46.2	12 5.2	- 2 23.1	-0.8908	0.5266	0.1547	-17	-82
$\xi$ Arietis	5.5	3.18	11.7	10 15.7	10 8 20.4	- 6 44.0	+0.4577	0.5322	0.1403	+64	- 5
25 Arietis	6.5	3.15	11.5	9 51.4	9 39.8	- 5 27.0	+1.0885	0.5326	0.1392	+90	+36
31 Arietis	5.7	3.19	10.3	12 6.8	14 17.3	- 0 57.9	-0.7607	0.5341	0.1352	- 9	-78
38 Arietis	5.2	+3.16	+ 9.6	+12 7.3	18 28.7	+ 3 5.8	-0.2104	0.5356	+0.1314	+23	-42
147 B. Arietis	5.8	3.08	7.8	12 53.4	11 5 7.8	-10 34.7	+0.2913	0.5396	0.1208	+52	-12
30 B. Tauri	6.4	3.00	4.6	15 10.6	20 24.2	+ 4 13.0	-0.4893	0.5459	0.1034	+ 7	-57
179 B. Tauri	5.9	2.86	2.3	14 57.3	12 10 37.7	- 6 1.1	+1.0912	0.5521	0.0850	+90	+43
180 B. Tauri	6.1	2.91	1.6	17 8.0	10 44.5	- 5 54.5	-1.2533	0.5522	0.0848	-55	-73
193 B. Tauri	6.2	+2.88	+ 1.2	+17 4.7	12 51.9	- 3 51.3	-1.0162	0.5532	+0.0819	-28	-73
48 Tauri	6.3	2.83	1.6	15 12.4	14 24.5	- 2 21.7	+1.1287	0.5539	0.0797	+90	+46
$\gamma$ Tauri	3.9	2.81	1.2	15 26.4	16 16.8	+ 0 33.0	+1.0225	0.5547	0.0770	+90	+38
$\delta$ Tauri	3.9	2.84	0.3	17 21.6	17 43.0	+ 0 50.2	-0.9380	0.5554	0.0750	-22	-74
63 Tauri	5.7	2.82	0.5	16 35.8	17 57.1	+ 1 3.8	-0.0969	0.5555	0.0746	+29	-29
64 Tauri	4.9	+2.83	+ 0.3	+17 15.9	18 15.4	+ 1 21.6	-0.7937	0.5556	+0.0742	-12	-74
68 Tauri	4.3	2.84	0.0	17 45.0	18 53.8	+ 1 58.7	-1.2698	0.5559	0.0733	-61	-74
70 Tauri	6.4	2.79	+ 0.7	15 45.8	18 59.1	+ 2 3.8	+0.8759	0.5559	0.0731	+90	+27
71 Tauri	4.6	2.78	0.7	15 26.6	19 19.5	+ 2 23.6	+1.2465	0.5561	0.0726	+90	+62
75 Tauri	5.2	2.78	0.3	16 11.2	20 17.3	+ 3 19.4	+0.5149	0.5566	0.0712	+70	+ 5
$\theta^1$ Tauri	4.2	+2.77	+ 0.4	+15 47.4	20 21.1	+ 3 23.0	+0.9456	0.5566	+0.0711	+90	+32
$\theta^2$ Tauri	3.6	2.77	0.4	15 42.0	20 23.7	+ 3 25.6	+1.0466	0.5566	0.0711	+90	+40
264 B. Tauri	4.8	2.77	0.2	16 1.5	21 16.0	+ 4 16.3	+0.7567	0.5570	0.0698	+90	+20
85 Tauri	6.0	2.76	+ 0.2	15 41.1	21 52.4	+ 4 51.3	+1.1639	0.5573	0.0689	+90	+52
119 H <sup>1</sup> . Tauri	6.2	2.79	- 0.6	17 51.2	22 37.5	+ 5 34.9	-1.1146	0.5576	0.0678	-37	-73
275 B. Tauri	6.5	+2.75	- 0.1	+16 9.6	22 41.2	+ 5 38.5	+0.7085	0.5576	+0.0677	+90	+17
a Tauri (Ald.)	1.1	2.75	0.4	16 21.2	23 44.1	+ 6 39.3	+0.5709	0.5581	0.0661	+75	+ 9
89 Tauri	5.8	2.73	0.3	15 52.7	23 04.1	+ 7 39.3	+1.1486	0.5586	0.0646	+90	+50
318 B. Tauri	5.7	2.64	2.1	17 1.9	9 31.0	- 7 53.5	+0.4148	0.5626	0.0509	+62	+ 2
m Tauri	5.0	2.65	3.3	18 32.4	14 1.1	- 3 32.7	-0.9814	0.5646	0.0437	-25	-72
111 Tauri	5.1	+2.51	- 4.1	+17 18.7	21 37.9	+ 3 48.4	+0.6115	0.5679	+0.0310	+80	+15
115 Tauri	5.3	2.49	4.5	17 53.7	22 51.1	+ 4 59.0	+0.0282	0.5685	0.0289	+36	-17
117 Tauri	6.0	2.47	4.4	17 10.4	23 14.5	+ 5 21.6	+0.8040	0.5686	0.0283	+90	+27
119 Tauri	4.9	2.48	5.0	18 32.2	14 1 4.5	+ 7 7.7	-0.5902	0.5694	0.0251	+ 1	-57
167 H <sup>1</sup> . Tauri	5.5	2.45	4.5	17 0.0	1 6.5	+ 7 9.6	+1.0370	0.5695	0.0250	+90	+44
120 Tauri	5.6	+2.47	- 5.1	+18 29.1	1 39.4	+ 7 41.4	-0.5210	0.5697	+0.0241	+ 5	-51
122 Tauri	5.5	2.42	4.9	16 59.5	3 14.2	+ 9 12.8	+1.0935	0.5703	0.0214	+90	+49
130 Tauri	5.6	2.37	5.8	17 42.0	7 47.0	-10 23.9	+0.4236	0.5723	+0.0134	+62	+ 6
19 B. Geminorum	6.2	2.23	7.6	18 42.0	19 6.8	+ 0 31.6	-0.5889	0.5767	-0.0069	+ 1	-56
124 H <sup>1</sup> . Orionis	5.7	2.21	7.4	17 55.6	19 31.4	+ 0 55.3	+0.2166	0.5768	0.0076	+48	- 4
71 Orionis	5.1	+2.23	- 7.9	+19 10.9	19 40.1	+ 1 3.7	-1.0973	0.5769	-0.0079	-36	-71

## ELEMENTS OF OCCULTATIONS, 1922. 501

SEPTEMBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
		s	"	°	d h m	h m				°	°
B. D. +17° 1191	6.5	+2.19	-7.3	+17 12.4	14 20 21.6	+1 43.7	+0.9635	0.5771	-0.0092	+90	+40
287 B. Orionis	6.2	2.18	7.5	17 21.3	21 29.4	+2 49.1	+0.7961	0.5776	-0.0113	+90	+28
292 B. Orionis	6.5	2.17	7.7	17 47.9	22 31.0	+3 48.5	+0.3191	0.5779	-0.0131	+54	+1
B. D. +17° 1275	6.2	2.10	8.0	16 59.5	15 2 41.9	+7 50.3	+1.0875	0.5794	-0.0208	+90	+49
26 Geminorum	5.2	2.04	8.8	17 43.2	7 28.8	-11 33.3	+0.2081	0.5810	-0.0297	+47	-7
74 B. Geminorum	6.2	+2.02	-9.2	+18 16.6	9 35.3	-9 31.3	-0.4355	0.5816	-0.0336	+10	-46
110 B. Geminorum	6.2	1.92	9.7	17 51.9	15 57.2	-3 23.4	-0.2591	0.5835	-0.0454	+19	-35
41 H <sup>1</sup> . Geminorum	6.0	1.90	9.4	16 47.1	16 1.3	-3 19.5	+0.8518	0.5836	-0.0455	+90	+29
51 Geminorum	5.3	1.84	9.6	16 17.4	20 34.9	+1 4.1	+1.1323	0.5848	-0.0540	+90	+50
λ Geminorum	3.6	1.82	9.9	16 40.8	22 33.6	+2 58.4	+0.6200	0.5853	-0.0577	+81	+13
162 B. Geminorum	5.7	+1.75	-10.6	+17 15.0	16 4 17.2	+8 29.2	-0.3269	0.5867	-0.0683	+16	-41
68 Geminorum	5.2	1.72	10.2	15 59.6	5 3.5	+9 13.7	+0.9072	0.5868	-0.0697	+90	+30
f Geminorum	5.3	1.71	11.0	17 51.0	7 28.9	+11 33.7	-1.1660	0.5874	-0.0741	-43	-73
1 Cancri	6.0	1.59	10.9	15 59.8	14 47.3	-5 24.3	+0.1355	0.5888	-0.0873	+43	-16
2 B. Cancri	6.0	1.59	11.2	16 43.6	15 25.0	-4 48.0	-0.6616	0.5889	-0.0884	-3	-69
5 Cancri	5.9	+1.58	-11.2	+16 40.1	16 39.2	-3 36.6	-0.7123	0.5891	-0.0906	-7	-73
30 B. Cancri	6.1	1.51	10.9	14 51.5	20 36.0	+0 11.4	+0.7517	0.5897	-0.0975	+90	+17
29 Cancri	5.9	1.42	11.1	14 28.0	17 3 53.7	+7 12.5	+0.3870	0.5906	-0.1100	+59	-5
84 B. Cancri	6.4	1.39	11.0	13 31.3	6 1.4	+9 15.4	+1.1004	0.5909	-0.1136	+90	+41
90 B. Cancri	6.3	1.39	11.5	15 34.9	6 58.8	+10 10.6	-1.0817	0.5910	-0.1152	-33	-75
A <sup>1</sup> Cancri	5.5	+1.35	-10.9	+12 57.5	9 55.6	-10 59.2	+1.2078	0.5912	-0.1200	+90	+52
a Cancri	4.3	1.28	10.9	12 9.4	16 13.6	-4 55.4	+1.2189	0.5918	-0.1299	+90	+52
209 B. Cancri	6.5	1.23	10.9	11 52.8	20 52.7	-0 27.0	+0.8731	0.5920	-0.1369	+90	+21
222 B. Cancri	6.3	1.20	10.8	11 49.5	18 0 12.3	+2 45.1	+0.4626	0.5921	-0.1417	+65	-4
ξ Leonis	5.1	1.14	10.8	11 38.6	6 0.1	+8 19.8	-0.2012	0.5923	-0.1497	+23	-42
o Leonis	3.8	+1.11	-10.5	+10 14.7	9 48.0	+11 59.1	+0.6074	0.5924	-0.1546	+77	+3
83 B. Leonis	5.9	+1.06	10.2	+9 18.0	16 5.4	-5 57.9	+0.5435	0.5924	-0.1623	+71	-1
NEW MOON.											
598 B. Virginis	6.1	+1.22	-1.9	-7 40.6	22 18 34.6	-7 10.9	-0.9613	0.5905	-0.1695	-24	-90
623 B. Virginis	6.5	+1.28	-1.6	-8 53.0	22 26.6	-3 27.6	-0.4158	0.5904	-0.1654	+9	-61
95 Virginis	5.4	1.28	1.4	8 56.5	23 25.2	-2 31.3	-0.5190	0.5904	-0.1643	+3	-69
96 Virginis	6.5	1.31	1.5	9 58.0	23 0 21.4	-1 37.2	+0.3416	0.5904	-0.1633	+51	-16
κ Virginis	4.3	1.32	1.2	9 54.7	1 57.8	-0 4.5	+0.0272	0.5903	-0.1614	+32	-33
2 Libræ	6.3	1.38	1.1	11 21.5	6 18.3	+4 6.3	+0.7746	0.5901	-0.1562	+79	+9
4 G. Libræ	6.5	+1.38	-1.0	-11 19.0	6 49.6	+4 36.4	+0.6515	0.5901	-0.1556	+75	+2
6 B. Libræ	6.2	1.39	-0.1	11 58.5	11 56.4	+9 31.7	+0.5286	0.5899	-0.1490	+64	-5
22 B. Libræ	6.4	1.48	0.0	12 30.7	16 25.0	-10 9.8	+0.4129	0.5897	-0.1429	+55	-11
13 Libræ	5.7	1.49	+0.7	11 34.8	19 6.3	-7 34.6	-0.8977	0.5895	-0.1391	-23	-90
γ Libræ	4.0	1.71	2.4	14 31.8	24 12 7.7	+8 48.6	-0.0882	0.5880	-0.1129	+21	-40
190 B. Libræ	6.5	+1.75	+2.7	-14 47.6	15 24.4	+11 57.9	-0.1829	0.5876	-0.1075	+16	-45
η Libræ	5.5	1.76	2.6	15 25.5	15 40.5	-11 46.5	+0.4280	0.5875	-0.1070	+52	-10
θ Libræ	4.4	1.83	3.0	16 30.0	19 43.0	-7 53.0	+1.1026	0.5870	-0.1002	+74	+35
203 B. Libræ	6.2	1.81	3.7	14 36.0	20 52.7	-6 46.0	-0.9434	0.5868	-0.0983	-30	-90
49 Libræ	5.4	1.82	3.1	16 18.2	22 27.5	-5 14.7	+0.6356	0.5866	-0.0955	+67	+2
φ Ophiuchi	4.4	+1.99	+5.3	-16 26.5	25 11 20.0	+7 9.3	-0.3065	0.5842	-0.0728	+5	-53
24 Scorp <sup>ii</sup>	5.0	2.06	5.6	17 35.4	15 42.6	+11 22.2	+0.5734	0.5833	-0.0649	+59	-2
78 B. Ophiuchi	6.5	2.12	6.8	16 40.9	21 49.8	-6 44.1	-0.7282	0.5818	-0.0538	-20	-90
90 B. Ophiuchi	6.5	2.16	6.4	18 7.6	23 23.1	-5 14.2	+0.6852	0.5814	-0.0509	+69	+4
125 B. Ophiuchi	6.2	2.19	7.3	17 30.3	26 3 0.5	-1 44.8	-0.1307	0.5804	-0.0443	+12	-42
164 B. Ophiuchi	6.0	+2.25	+8.0	-17 40.4	7 58.4	+3 2.3	-0.1532	0.5790	-0.0352	+10	-44

## 502 ELEMENTS OF OCCULTATIONS, 1922.

## SEPTEMBER.

THE STAR'S				AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0	Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	T	$\alpha'$	$y'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$							
		s	"	d h m	h m					
192 B. Ophiuchi	6.3	+2.28	+ 8.0	-18 22.3	28 9 59.3	+ 4 58.8	+0.5074	0.5784	-0.0315	+51 - 6
305 B. Ophiuchi	6.3	2.44	9.9	18 47.2	23 29.8	- 5 59.7	+0.6874	0.5740	0.0070	+67 + 5
6 Sagittarii	6.5	2.43	10.8	17 9.1	27 1 54.3	- 3 40.3	-1.0445	0.5731	-0.0026	-47 -90
32 G. Sagittarii	5.7	2.46	11.2	17 9.8	4 43.1	- 0 57.4	-1.0346	0.5721	+0.0024	-46 -90
64 B. Sagittarii	6.1	2.52	11.1	18 41.0	8 4.4	+ 2 16.7	+0.5879	0.5709	0.0083	+56 - 1
6 B. Scuti	5.9	+2.51	+11.7	-17 23.9	8 50.0	+ 3 0.8	-0.7641	0.5706	+0.0096	-27 -90
52 G. Sagittarii	6.4	2.53	11.3	18 29.4	8 56.5	+ 3 7.1	+0.3910	0.5705	0.0098	+40 -12
17 H <sup>1</sup> Sagittarii	6.4	2.53	11.3	18 38.9	9 29.2	+ 3 38.6	+0.5639	0.5703	0.0108	+54 - 2
Y Sagit. (var.)	5.4	2.55	11.4	18 53.6	10 39.5	+ 4 46.5	+0.8376	0.5699	0.0128	+72 +15
85 B. Sagittarii	6.0	2.56	12.2	17 50.7	13 34.5	+ 7 35.4	-0.2269	0.5687	0.0179	+ 5 -48
95 B. Sagittarii	5.7	+2.59	+11.9	-18 46.6	14 33.8	+ 8 32.5	+0.7789	0.5683	+0.0196	+72 +11
100 B. Sagittarii	5.0	2.59	12.2	18 27.2	15 7.2	+ 9 4.7	+0.4486	0.5681	0.0205	+46 - 9
9 Sagittarii	4.0	2.79	15.2	17 59.5	28 13 49.8	+ 7 0.8	+0.8559	0.5587	0.0576	+72 +16
v Sagittarii	4.4	2.76	15.8	16 5.9	13 52.8	+ 7 3.7	-1.1760	0.5586	0.0577	-54 -90
54 Sagittarii	5.4	2.85	16.6	16 28.1	22 40.2	- 8 26.5	-0.2145	0.5549	0.0709	+10 -47
e Sagittarii	5.2	+2.85	+16.8	-16 18.2	23 30.7	- 7 37.6	-0.3331	0.5547	+0.0721	+ 4 -55
283 B. Sagittarii	5.5	2.85	17.0	15 38.8	29 0 0.2	- 7 9.0	-1.0064	0.5543	0.0728	-37 -90
g Sagittarii	5.1	2.90	17.7	15 41.7	6 46.3	- 0 36.3	-0.4321	0.5514	0.0824	0 -64
16 B. Capricorni	6.2	2.98	19.0	15 1.6	17 39.7	+ 9 56.1	-0.1823	0.5469	0.0968	+15 -45
$\beta$ Capricorni	3.2	2.98	19.0	15 1.4	17 46.5	+10 2.6	-0.1746	0.5469	0.0970	+16 -45
31 B. Capricorni	6.4	+3.01	+19.0	-15 59.7	21 29.2	-10 21.8	+1.2536	0.5453	+0.1016	+74 +54
27 G. Capricorni	6.2	3.01	19.2	15 18.8	22 37.9	- 9 15.3	+0.6272	0.5449	0.1030	+68 + 1
45 B. Capricorni	6.1	3.01	19.8	13 59.1	30 0 9.6	- 7 46.5	-0.6634	0.5442	0.1049	-10 -86
$\tau$ Capricorni	5.2	3.04	19.6	15 13.4	2 37.2	- 5 23.6	+0.9513	0.5433	0.1078	+75 +22
84 B. Capricorni	6.0	3.06	20.7	12 49.7	8 14.3	+ 0 3.0	-1.0445	0.5411	0.1142	-35 -90
v Aquarii	4.5	+3.10	+21.6	-11 40.9	17 36.7	+ 9 8.0	-1.1866	0.5376	+0.1242	-47 -90
53 B. Aquarii	6.5	+3.13	+21.2	-13 31.2	20 47.6	-11 47.0	+1.2331	0.5365	+0.1274	+77 +49

## OCTOBER.

72 B. Aquarii	6.5	+3.16	+22.0	-11 54.0	1 2 57.8	- 5 48.1	+0.2568	0.5342	+0.1332	+45 -20
137 B. Capricorni	6.2	3.19	22.4	10 55.3	8 40.3	- 0 15.9	-0.0464	0.5326	0.1382	+27 -37
c <sup>1</sup> Capricorni	5.3	3.20	22.9	9 26.1	11 30.4	+ 2 29.1	-1.2919	0.5317	0.1406	-61 -85
c <sup>2</sup> Capricorni	6.3	3.20	22.9	9 37.8	12 9.1	+ 3 6.6	-0.9857	0.5315	0.1411	-27 -90
96 B. Aquarii	6.5	3.22	22.7	10 40.4	15 53.7	+ 6 44.5	+0.6995	0.5304	0.1441	+79 + 5
0 Aquarii	4.3	+3.28	+23.5	- 8 9.9	2 354.6	- 5 36.0	-0.2891	0.5274	+0.1526	+16 -52
150 B. Aquarii	6.0	3.27	23.2	9 25.4	3 55.8	- 5 34.6	+1.1056	0.5273	0.1526	+81 +33
9 Aquarii	5.3	3.28	23.5	8 12.4	5 39.8	- 3 53.8	+0.0252	0.5269	0.1536	+34 +33
170 B. Aquarii	6.0	3.29	23.7	7 35.0	7 24.5	- 2 12.1	-0.3975	0.5266	0.1547	+11 -59
186 B. Aquarii	6.1	3.31	23.7	6 56.8	11 27.7	+ 1 44.0	-0.4695	0.5257	0.1570	+ 7 -65
67 Aquarii	6.4	+3.33	+23.6	- 7 21.9	17 43.4	+ 7 48.8	+0.9876	0.5245	+0.1603	+83 +23
252 B. Aquarii	5.8	3.36	23.9	5 23.8	3 0 1.5	-10 4.1	-0.1766	0.5235	0.1631	+24 -45
197 G. Aquarii	6.3	3.36	23.9	5 13.2	1 8.4	- 8 59.1	-0.1901	0.5233	0.1636	+23 -46
263 B. Aquarii	6.1	3.37	23.9	5 7.5	3 22.9	- 6 48.4	+0.0708	0.5231	0.1645	+38 -30
293 B. Aquarii	5.5	3.40	23.8	3 54.9	10 49.7	+ 0 25.5	-0.0376	0.5222	0.1670	+32 -37
316 B. Aquarii	6.5	+3.42	+23.6	- 4 20.3	13 18.4	+ 2 49.9	+0.8465	0.5220	+0.1677	+86 +13
13 Piscium	6.4	3.44	23.8	1 30.6	19 32.7	+ 8 53.5	-1.2444	0.5216	0.1692	-47 -90
14 Piscium	5.9	3.45	23.7	1 40.3	20 42.5	+10 1.3	-0.8680	0.5215	0.1694	-15 -90
60 B. Piscium	6.0	3.48	23.1	0 19.1	4 742.5	- 3 17.4	-0.5008	0.5212	0.1708	+ 7 -67
80 B. Piscium	6.3	3.50	22.7	- 0 55.8	13 11.3	+ 2 2.0	+1.1158	0.5213	0.1710	+90 +33
98 B. Piscium	6.3	+3.53	+22.3	+ 1 15.7	19 58.1	+ 8 37.2	-0.1611	0.5216	+0.1707	+25 -44

# ELEMENTS OF OCCULTATIONS, 1922. 503

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle. <i>H</i>	<i>P</i>	<i>z'</i>	<i>y'</i>	<i>N.</i>	<i>S.</i>
		$\Delta\alpha$	$\Delta\delta$								
		<i>s</i>	<i>"</i>	<i>°</i>	<i>d h m</i>	<i>h m</i>				<i>°</i>	<i>'</i>
44 Piscium	6.0	+3.54	+22.0	+ 130.8	5 0 1.4	-11 26.6	+0.2499	0.5218	+0.1703	+49	-21
155 B. Piscium	6.5	3.58	20.6	2 58.0	13 45.7	+ 1 54.2	+0.9593	0.5232	0.1677	+90	+22
73 Piscium	6.2	3.62	19.9	5 14.6	20 55.0	+ 8 51.1	-0.3755	0.5244	0.1654	+14	-57
77 Piscium	6.4	3.61	19.8	4 29.9	21 25.0	+ 9 20.2	+0.5338	0.5244	0.1652	+70	-4
e Piscium	5.6	3.60	19.6	5 14.6	22 46.1	+10 38.9	-0.0686	0.5247	0.1648	+30	-37
88 Piscium	6.2	+3.64	+19.2	+ 6 35.3	6 2 4.8	-10 8.1	-1.0169	0.5253	+0.1634	-25	-84
263 B. Piscium	6.4	3.66	18.3	7 33.8	9 13.4	- 3 11.9	-0.9400	0.5267	0.1602	-20	-83
<i>μ</i> Piscium	5.0	3.64	18.3	5 44.9	10 10.1	- 2 16.9	+1.2223	0.5269	0.1597	+90	+46
o Piscium	4.5	3.68	17.0	8 46.2	18 3.7	+ 5 22.9	-0.8806	0.5287	0.1554	-16	-82
ξ Arietis	5.5	3.68	13.7	10 15.7	7 14 14.4	+ 0 57.4	+0.4707	0.5343	0.1410	+65	- 5
25 Arietis	6.5	+3.66	+13.4	+ 9 51.4	15 33.6	+ 2 14.3	+1.1023	0.5347	+0.1399	+90	+37
31 Arietis	5.7	3.72	12.4	12 6.8	20 10.3	+ 6 42.6	-0.7482	0.5361	0.1359	- 8	-78
38 Arietis	5.2	3.70	11.7	12 7.3	8 0 21.1	+10 45.7	-0.1966	0.5375	0.1320	+23	-41
147 B. Arietis	5.8	3.68	9.7	12 53.4	10 59.4	- 2 55.7	+0.3078	0.5410	0.1213	+53	-11
30 B. Tauri	6.4	3.66	6.5	15 10.6	9 2 16.5	+11 52.7	-0.4724	0.5465	0.1037	+ 8	-56
179 B. Tauri	5.9	+3.56	+ 3.8	+14 57.4	16 33.5	+ 1 42.2	+1.1183	0.5517	+0.0851	+90	+45
180 B. Tauri	6.1	3.62	3.2	17 8.0	16 40.3	+ 1 48.7	-1.2382	0.5518	0.0850	-52	-73
193 B. Tauri	6.2	3.60	2.8	17 4.7	18 48.5	+ 3 52.8	-0.9997	0.5525	0.0820	-26	-73
48 Tauri	6.3	3.54	3.0	15 12.4	20 21.7	+ 5 22.9	+1.1573	0.5531	0.0798	+90	+50
γ Tauri	3.9	3.53	2.6	15 26.5	22 14.9	+ 7 12.5	+1.0512	0.5538	0.0771	+90	+40
δ Tauri	3.9	+3.57	+ 1.8	+17 21.7	23 41.7	+ 8 36.4	-0.9207	0.5544	+0.0751	-20	-73
63 Tauri	5.7	3.55	1.9	16 35.8	23 55.9	+ 8 50.1	-0.0745	0.5543	0.0747	+30	-27
64 Tauri	4.9	3.56	1.7	17 15.9	10 14.4	+ 9 7.9	-0.7754	0.5545	0.0743	-10	-73
68 Tauri	4.3	3.57	1.4	17 45.1	0 53.0	+ 9 45.3	-1.2544	0.5547	0.0733	-56	-73
70 Tauri	6.4	3.52	2.0	15 45.9	0 58.4	+ 9 50.6	-0.9046	0.5547	0.0732	+90	+29
71 Tauri	4.6	+3.51	+ 2.0	+15 26.6	1 19.0	+10 10.4	+1.2777	0.5549	+0.0727	+79	+69
75 Tauri	5.2	3.51	1.6	16 11.2	2 17.3	+11 6.9	-0.5416	0.5552	0.0713	+72	+ 7
θ <sup>1</sup> Tauri	4.2	3.51	1.7	15 47.4	2 21.1	+11 10.5	-0.9751	0.5553	0.0712	+90	+35
θ <sup>2</sup> Tauri	3.6	3.50	1.7	15 42.0	2 23.7	+11 13.0	-1.0768	0.5553	0.0711	+90	+43
264 B. Tauri	4.8	3.51	1.4	16 1.6	3 16.5	-11 56.0	+0.7854	0.5556	0.0698	+90	+22
85 Tauri	6.0	+3.49	+ 1.4	+15 41.2	3 53.2	-11 20.5	+1.1954	0.5558	+0.0689	+90	+55
119 H <sup>1</sup> Tauri	6.2	3.54	0.7	17 51.2	4 38.7	-10 36.4	-1.0979	0.5561	0.0678	-35	-73
275 B. Tauri	6.5	3.49	1.2	16 9.7	4 42.5	-10 32.7	+0.7372	0.5561	0.0677	+90	+19
a Tauri (Ald.)	1.1	3.49	0.8	16 21.2	5 45.9	- 9 31.4	+0.5991	0.5565	0.0661	+78	+11
89 Tauri	5.8	3.47	+ 0.8	15 52.7	6 48.6	- 8 30.8	+1.1810	0.5569	0.0646	+90	+54
318 B. Tauri	5.7	+3.41	- 1.2	+17 1.9	15 39.4	+ 0 2.3	+0.4444	0.5599	+0.0509	+64	+ 4
m Tauri	5.0	3.43	2.5	18 32.5	20 13.1	+ 4 26.7	-0.9628	0.5614	0.0436	-24	-72
111 Tauri	5.1	3.30	3.6	17 18.7	11 3 50.9	+11 54.9	-0.6460	0.5640	0.0310	+85	+17
115 Tauri	5.3	3.29	4.0	17 53.7	5 11.3	-10 53.4	+0.0574	0.5643	0.0289	+38	-15
117 Tauri	6.0	3.27	3.9	17 10.4	5 35.2	-10 30.3	+0.8409	0.5644	0.0283	+90	+30
119 Tauri	4.9	+3.28	- 4.6	+18 32.2	7 27.1	- 8 42.2	-0.5668	0.5649	+0.0251	+ 2	-55
167 H <sup>1</sup> Tauri	5.5	3.24	4.2	17 0.0	7 29.1	- 8 40.3	+1.0767	0.5651	0.0250	+90	+47
120 Tauri	5.6	3.27	4.7	18 29.1	8 2.6	- 8 7.9	-0.4969	0.5652	0.0241	+ 6	-49
122 Tauri	5.5	3.22	4.6	16 59.5	9 39.0	- 6 34.8	+1.1346	0.5657	0.0214	+90	+53
130 Tauri	5.6	3.18	5.6	17 42.0	14 17.2	- 2 6.1	+0.4588	0.5671	+0.0135	+65	+ 9
19 B. Geminorum	6.2	+3.05	- 7.9	+18 42.0	12 1 51.8	+ 9 4.2	-0.5636	0.5702	-0.0066	+ 2	-53
124 H <sup>1</sup> Orionis	5.7	3.03	7.8	17 55.6	2 16.9	+ 9 28.4	+0.2518	0.5703	0.0074	+50	- 2
71 Orionis	5.1	3.05	8.3	19 10.9	2 25.9	+ 9 37.1	-1.0782	0.5705	0.0076	-34	-71
B. D. +17° 119 <sup>1</sup>	6.5	3.00	7.6	17 12.4	3 8.4	+10 18.1	+1.0082	0.5705	0.0089	+90	+44
287 B. Orionis	6.2	2.99	7.9	17 21.3	4 17.9	+11 25.2	+0.8390	0.5708	0.0109	+90	+31
292 B. Orionis	6.5	+2.98	- 8.2	+17 47.9	5 20.9	-11 34.0	+0.3563	0.5711	-0.0128	+57	+ 3

## 504 ELEMENTS OF OCCULTATIONS, 1922.

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	$\gamma$	$\alpha'$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
B. D. +17° 1275	6.2	+2.91	-8.6	+16 59.5	12 9 38.2	-7 25.8	+1.1356	0.5721	-0.0204	+0.0	+53
26 Geminorum	5.2	2.86	9.6	17 43.2	14 32.7	-2 41.7	+0.2452	0.5731	0.0201	+49	-5
74 B. Geminorum	6.2	2.83	10.1	18 16.6	16 42.8	-0 36.3	-0.4070	0.5736	0.0330	+11	-44
110 B. Geminorum	6.2	2.73	10.8	17 51.9	23 15.6	+5 42.6	-0.2276	0.5749	0.0446	+21	-33
41 H <sup>1</sup> . Geminorum	6.0	2.71	10.4	16 47.1	23 19.9	+5 46.7	+0.8994	0.5749	0.0447	+90	+32
51 Geminorum	5.3	+2.64	-10.9	+16 17.4	13 4 1.7	+10 18.5	+1.1850	0.5757	-0.0531	+90	+56
λ Geminorum	3.6	2.61	11.3	16 40.7	6 4.1	-11 43.6	+0.6653	0.5760	0.0567	+87	+16
162 B. Geminorum	5.7	2.54	12.2	17 15.0	11 58.7	-6 1.7	-0.2956	0.5769	0.0671	+18	-38
68 Geminorum	5.2	2.50	11.8	15 59.5	12 46.5	-5 15.6	+0.9577	0.5771	0.0685	+90	+34
f Geminorum	5.3	2.49	12.7	17 51.0	15 16.6	-2 50.8	-1.1478	0.5774	0.0728	-41	-73
1 Cancri	6.0	+2.35	-12.8	+15 59.8	22 49.9	+4 26.1	+0.1744	0.5783	-0.0857	+45	-14
2 B. Cancri	6.0	2.35	13.1	16 43.6	23 28.8	+5 3.6	-0.6355	0.5784	0.0868	-2	-67
5 Cancri	5.9	2.33	13.2	16 40.1	14 05.5	+6 17.5	-0.6870	0.5785	0.0890	-5	-71
30 B. Cancri	6.1	2.25	13.0	14 51.5	4 50.6	+10 13.8	+0.8007	0.5790	0.0958	+90	+21
29 Cancri	5.9	2.14	13.4	14 28.0	12 23.7	-6 29.6	+0.4299	0.5797	0.1080	+62	-2
84 B. Cancri	6.4	+2.10	-13.2	+13 31.3	14 35.9	-4 22.2	+1.1548	0.5799	-0.1115	+90	+46
90 B. Cancri	6.3	2.10	14.0	15 34.8	15 35.4	-3 24.8	-1.0631	0.5799	0.1131	-31	-75
A <sup>1</sup> Cancri	5.5	2.04	13.2	12 57.5	18 38.5	-0 28.3	+1.2636	0.5801	0.1178	+88	+61
α Cancri	4.3	1.94	13.3	12 9.4	15 1 9.9	+5 48.7	+1.2742	0.5806	0.1276	+87	+62
209 B. Cancri	6.5	1.88	13.4	11 52.7	5 58.9	+10 27.2	+0.9220	0.5809	0.1345	+90	+25
222 B. Cancri	6.3	+1.83	-13.4	+11 49.5	9 25.5	-10 13.7	+0.5043	0.5812	-0.1392	+68	-1
ξ Leonis	5.1	1.75	13.5	11 38.5	15 25.3	-4 27.1	-0.1708	0.5815	0.1472	+25	-40
o Leonis	3.8	1.69	13.1	10 14.7	19 20.9	-0 40.0	+0.6491	0.5817	0.1521	+83	+6
83 B. Leonis	5.9	1.61	12.7	9 18.0	1 50.8	+5 35.7	+0.5825	0.5821	0.1597	+75	+1
89 B. Leonis	6.2	1.61	12.6	8 41.0	2 34.0	+6 17.3	+1.0850	0.5822	0.1605	+90	+34
π Leonis	4.9	+1.60	-12.5	+8 24.9	3 27.3	+7 8.7	+1.2096	0.5822	-0.1615	+90	+47
A Leonis	4.6	1.56	13.0	10 22.6	6 42.6	+10 16.8	-1.2848	0.5824	0.1650	-55	-80
43 Leonis	6.3	1.50	12.0	6 56.2	13 8.0	-7 31.9	+1.0715	0.5829	0.1713	+90	+32
44 Leonis	5.9	1.48	12.5	9 10.7	14 4.3	-6 37.7	-1.3253	0.5829	0.1722	-68	-74
48 Leonis	5.2	1.44	11.8	7 21.1	18 7.8	-2 43.1	-0.2117	0.5832	0.1758	+23	-45
35 Sextantis	6.1	+1.42	-11.2	+5 9.3	21 45.2	+0 46.4	+1.3300	0.5835	-0.1787	+75	+70
37 Sextantis	6.3	1.40	11.5	6 46.9	22 54.5	+1 53.1	-0.4928	0.5836	0.1796	+7	-65
56 Leonis	6.1	1.36	11.3	6 35.9	17 3 6.6	+5 55.8	-1.0710	0.5840	0.1826	-30	-84
d Leonis	5.0	1.36	10.6	4 2.0	5 2.0	+7 47.0	+1.1181	0.5842	0.1838	+90	+35
80 Leonis	6.4	1.27	10.0	4 17.2	15 41.6	-5 56.8	-1.1234	0.5853	0.1893	-34	-86
83 Leonis	6.3	+1.24	-9.6	+3 26.2	16 6.3	-5 33.0	-0.3617	0.5854	-0.1895	+15	-56
τ Leonis	5.2	1.27	9.7	3 17.0	16 34.6	-5 5.8	-0.3005	0.5854	0.1897	+18	-52
89 Leonis	5.7	1.24	9.6	3 29.5	19 17.3	-2 29.1	-1.0203	0.5857	0.1907	-26	-87
9 B. Virginis	6.2	1.23	-8.4	+0 6.8	18 1 26.8	+3 26.7	+1.1271	0.5864	0.1922	+90	+34
NEW MOON.											
η Libræ	5.5	+1.48	+3.2	-15 25.5	22 1 47.2	+0 8.3	+0.3720	0.5967	-0.1094	+48	-14
θ Libræ	4.4	1.53	3.7	16 30.0	5 43.0	+3 55.0	+1.0355	0.5964	0.1025	+74	+29
203 B. Libræ	6.2	1.51	4.2	14 36.0	6 50.7	+5 0.1	-0.9858	0.5963	0.1005	-33	-90
49 Libræ	5.4	1.51	3.7	16 18.2	8 22.8	+6 28.6	+0.5724	0.5961	0.0977	+62	-2
φ Ophiuchi	4.4	+1.63	+5.8	-16 26.5	20 52.3	-5 30.5	-0.3651	0.5943	-0.0746	+2	-58
24 Scorpil	5.0	1.68	6.2	17 35.4	1 6.8	-1 25.6	+0.5002	0.5934	0.0666	+53	-6
78 B. Ophiuchi	6.5	1.72	7.2	16 40.9	7 2.4	+4 16.5	-0.7866	0.5920	0.0552	-24	-90
90 B. Ophiuchi	6.5	1.75	6.9	18 7.6	8 32.8	+5 43.5	+0.6061	0.5916	0.0523	+61	0
29 Ophiuchi	6.4	1.77	7.0	18 46.2	9 24.6	+6 33.3	+1.2191	0.5914	0.0507	+72	+51
125 B. Ophiuchi	6.2	+1.77	+7.7	-17 30.3	12 3.4	+9 6.2	-0.2001	0.5906	-0.0455	+8	-47

## ELEMENTS OF OCCULTATIONS, 1922. 505

OCTOBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922-0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	P	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
164 B. Ophiuchi	6.0	+1.81	+8.3	-17 40.4	23 16 51.9	-10 16.2	-0.2248	0.5891	-0.0363	+6	-48
192 B. Ophiuchi	6.3	1.84	8.4	18 22.3	18 49.0	-8 23.5	+0.4254	0.5884	0.0325	+45	-10
305 B. Ophiuchi	6.3	1.96	10.0	18 47.2	24 7 54.3	+4 12.6	+0.5966	0.5834	0.0075	+56	0
6 Sagittarii	6.5	1.96	10.8	17 9.1	10 14.4	+6 27.6	-1.1120	0.5825	-0.0031	-53	-90
32 G. Sagittarii	5.7	1.98	11.2	17 9.8	12 58.1	+9 5.3	-1.1035	0.5812	+0.0020	-52	-90
64 B. Sagittarii	6.1	+2.04	+11.1	-18 41.0	16 13.5	-11 46.4	+0.4952	0.5798	+0.0081	+48	-6
6 B. Scuti	5.9	2.02	11.6	17 23.9	16 57.7	-11 3.8	-0.8386	0.5794	0.0094	-31	-90
52 G. Sagittarii	6.4	2.04	11.2	18 29.4	17 4.0	-10 57.7	+0.3006	0.5794	0.0096	+33	-17
17 H. Sagittarii	6.4	2.05	11.2	18 38.9	17 35.8	-10 27.1	+0.4710	0.5792	0.0106	+46	-8
Y Sagit. (var.)	5.4	2.06	11.3	18 53.6	18 44.0	-9 21.3	+0.7405	0.5786	0.0127	+72	+9
85 B. Sagittarii	6.0	+2.07	+12.0	-17 50.7	21 34.1	-6 37.4	-0.3106	0.5773	+0.0178	0	-54
95 B. Sagittarii	5.7	2.10	11.7	18 46.6	22 31.6	-5 41.9	+0.6814	0.5768	0.0195	+66	+5
100 B. Sagittarii	5.0	2.09	11.9	18 27.2	23 4.0	-5 10.7	+0.3553	0.5765	0.0205	+39	-14
g Sagittarii	4.0	2.29	14.6	17 59.5	25 21 11.5	-7 49.8	+0.7518	0.5651	0.0581	+73	+9
v Sagittarii	4.4	2.27	15.2	16 5.9	21 14.5	-7 46.9	-1.2566	0.5650	0.0582	-66	-85
45 Sagittarii	6.0	+2.30	+14.3	-18 27.0	21 15.6	-7 45.9	+1.2432	0.5650	+0.0582	+72	+55
54 Sagittarii	5.4	2.35	15.8	16 28.1	26 5 50.4	+0 31.4	-0.3082	0.5604	0.0715	+6	-54
e Sagittarii	5.2	2.36	16.0	16 18.2	6 39.8	+1 19.1	-0.4257	0.5599	0.0727	-1	-62
283 B. Sagittarii	5.5	2.36	16.1	15 38.8	7 8.7	+1 47.0	-1.0920	0.5597	0.0734	-44	-90
g Sagittarii	5.1	2.41	16.7	15 41.7	13 46.9	+8 11.9	-0.5252	0.5560	0.0830	-5	-71
16 B. Capricorni	6.2	+2.50	+17.9	-15 1.6	27 0 29.2	-5 26.9	-0.2790	0.5503	+0.0975	+10	-52
$\beta$ Capricorni	3.2	2.50	17.9	15 1.4	0 35.9	-5 20.5	-0.2713	0.5503	0.0976	+11	-51
31 B. Capricorni	6.4	2.55	17.7	15 59.7	4 15.3	-1 48.2	+1.1447	0.5484	0.1022	+75	+39
27 G. Capricorni	6.2	2.54	18.0	15 18.8	5 23.1	-0 42.5	+0.5236	0.5478	0.1037	+59	-5
45 B. Capricorni	6.1	2.55	18.7	13 59.1	6 53.5	+0 44.9	-0.7565	0.5471	0.1055	-16	-90
$\tau$ Capricorni	5.2	+2.58	+18.4	-15 13.4	9 19.1	+3 5.8	+0.8455	0.5458	+0.1084	+75	+14
84 B. Capricorni	6.0	2.62	19.5	12 49.7	14 52.2	+8 28.4	-1.1353	0.5431	0.1148	-43	-90
v Aquarii	4.5	2.69	20.4	11 41.0	28 0 8.9	-6 32.3	-1.2766	0.5388	0.1247	-61	-87
53 B. Aquarii	6.5	2.72	19.8	13 31.2	3 18.3	-3 32.8	+1.1291	0.5374	0.1278	+77	+36
72 B. Aquarii	6.5	2.76	20.6	11 54.1	9 25.9	+2 27.6	+0.1598	0.5348	0.1336	+39	-25
137 B. Capricorni	6.2	+2.81	+21.1	-10 55.4	15 6.3	+7 57.7	-0.1404	0.5326	+0.1386	+22	-43
c <sup>2</sup> Capricorni	6.3	2.83	21.6	9 37.8	18 34.1	+11 19.1	-1.0745	0.5313	0.1414	-34	-90
$\lambda$ Capricorni	5.5	2.84	20.9	11 43.2	18 41.1	+11 26.0	+1.2377	0.5312	0.1415	+79	+48
96 B. Aquarii	6.5	2.86	21.3	10 40.4	22 17.9	-9 3.7	+0.6046	0.5300	0.1444	+71	-1
$\theta$ Aquarii	4.3	2.96	22.2	8 10.0	29 10 17.0	+2 34.0	-0.3755	0.5263	0.1527	+12	-58
150 B. Aquarii	6.0	+2.96	+21.8	-9 25.4	10 18.3	+2 35.3	+1.0148	0.5262	+0.1527	+81	+25
g Aquarii	5.3	2.97	22.2	8 12.4	12 2.2	+4 16.1	-0.0614	0.5258	0.1538	+29	-38
170 B. Aquarii	6.0	2.98	22.4	7 35.0	13 46.7	+5 57.6	-0.4820	0.5253	0.1549	+6	-66
186 B. Aquarii	6.1	3.03	22.4	6 56.9	17 49.8	+9 53.5	-0.5520	0.5243	0.1572	+2	-72
67 Aquarii	6.4	3.07	22.3	7 21.9	30 0 5.5	-8 1.6	+0.9049	0.5230	0.1604	+83	+17
252 B. Aquarii	5.8	+3.11	+22.8	-5 23.8	6 23.9	-1 54.1	-0.2527	0.5218	+0.1633	+20	-49
197 G. Aquarii	6.3	3.12	22.8	5 13.3	7 30.9	-0 49.1	-0.2656	0.5216	0.1637	+19	-50
263 B. Aquarii	6.1	3.14	22.8	5 7.5	9 45.6	+1 21.7	-0.0037	0.5213	0.1646	+33	-35
293 B. Aquarii	5.5	3.20	22.8	3 54.9	17 13.0	+8 36.4	-0.1068	0.5204	0.1671	+28	-41
316 B. Aquarii	6.5	3.24	22.5	4 20.3	19 42.0	+11 1.0	+0.7776	0.5202	0.1679	+86	+9
13 Piscium	6.4	+3.28	+23.0	-1 30.6	31 1 57.0	-6 54.7	-1.3052	0.5197	+0.1694	-57	-87
14 Piscium	5.9	3.30	22.9	1 40.3	3 6.9	-5 46.8	-0.9284	0.5197	0.1696	-19	-90
60 B. Piscium	6.0	3.38	22.6	0 19.1	14 8.1	+4 55.6	-0.5525	0.5196	0.1711	+4	-72
80 B. Piscium	6.3	+3.41	+22.0	-0 55.8	19 37.4	+10 15.5	+1.0667	0.5199	+0.1714	+90	+29

## 506 ELEMENTS OF OCCULTATIONS, 1922.

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	F	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
<div>s</div>											
98 B. Piscium	6.3	+3.48	+21.9	+ 1 15.7	d 1 224.7	- 7 8.7	-0.2018	0.5203	+0.1713	+23	-46
44 Piscium	6.0	3.51	21.6	1 30.8	6 28.2	- 3 12.2	+0.2125	0.5207	0.1710	+47	-23
155 B. Piscium	6.5	3.61	20.4	2 58.0	20 12.5	+10 8.5	+0.9349	0.5228	0.1686	+90	+20
73 Piscium	6.2	3.68	20.0	5 14.6	2 321.4	- 6 55.0	-0.3897	0.5242	0.1665	+13	-58
77 Piscium	6.4	3.67	19.7	4 29.9	3 51.3	- 6 26.0	+0.5184	0.5243	0.1663	+69	- 5
e Piscium	5.6	+3.68	+19.6	+ 5 14.6	5 12.2	- 5 7.4	-0.0814	0.5246	+0.1658	+30	-38
88 Piscium	6.2	3.73	19.5	6 35.3	8 30.6	- 1 54.9	-1.0240	0.5254	0.1646	-25	-84
263 B. Piscium	6.4	3.79	18.7	7 33.8	15 37.9	+ 5 0.1	-0.9389	0.5272	0.1615	-21	-82
$\mu$ Piscium	5.0	3.78	18.3	5 44.9	16 34.5	+ 5 54.9	+1.2196	0.5275	0.1611	+90	+46
o Piscium	4.5	3.86	17.6	8 46.2	3 026.2	-10 27.2	-0.8692	0.5297	0.1568	-15	-82
<div>s</div>											
$\xi$ Arietis	5.5	+3.96	+14.3	+10 15.7	20 30.1	+ 9 0.6	+0.5025	0.5364	+0.1428	+68	- 3
25 Arietis	6.5	3.94	13.9	9 51.4	21 48.8	+10 16.9	+1.1340	0.5369	0.1417	+90	+39
31 Arietis	5.7	4.04	13.2	12 6.8	4 223.4	- 9 16.8	-0.7056	0.5385	0.1377	- 5	-78
38 Arietis	5.2	4.04	12.4	12 7.3	6 32.3	- 5 15.6	-0.1507	0.5401	0.1339	+26	-38
147 B. Arietis	5.8	4.07	10.4	12 53.4	17 5.3	+ 4 57.7	+0.3649	0.5441	0.1232	+57	- 8
<div>s</div>											
30 B. Tauri	6.4	+4.13	+ 7.2	+15 10.7	5 8 14.0	- 4 22.4	-0.3954	0.5500	+0.1056	+13	-50
179 B. Tauri	5.9	4.11	4.1	14 57.4	22 23.0	+ 9 19.0	+1.2076	0.5553	0.0868	+90	+55
180 B. Tauri	6.1	4.17	3.9	17 8.0	22 29.8	+ 9 25.6	-1.1437	0.5554	0.0867	-39	-73
193 B. Tauri	6.2	4.16	3.4	17 4.7	6 036.8	+11 28.5	-0.9035	0.5561	0.0837	-19	-73
48 Tauri	6.3	4.10	3.3	15 12.5	2 9.2	-11 2.1	+1.2509	0.5567	0.0815	+88	+62
<div>s</div>											
$\gamma$ Tauri	3.9	+4.11	+ 2.9	+15 26.5	4 1.4	- 9 13.6	+1.1470	0.5574	+0.0788	+90	+49
$\delta$ Tauri	3.9	4.16	2.3	17 21.7	5 27.4	- 7 50.5	-0.8196	0.5578	0.0767	-13	-73
63 Tauri	5.7	4.13	2.3	16 35.8	5 41.5	- 7 36.9	+0.0253	0.5579	0.0763	+36	-22
64 Tauri	4.9	4.15	2.2	17 15.9	5 59.8	- 7 19.2	-0.6741	0.5581	0.0759	- 4	-69
68 Tauri	4.3	4.16	2.0	17 45.1	6 38.2	- 6 42.0	-1.1515	0.5583	0.0749	-41	-73
<div>s</div>											
70 Tauri	6.4	+4.10	+ 2.2	+15 45.9	6 43.5	- 6 36.9	+1.0038	0.5583	+0.0748	+90	+36
75 Tauri	5.2	4.11	1.9	16 11.2	8 1.7	- 5 21.3	+0.6429	0.5587	0.0729	+84	+13
$\theta^1$ Tauri	4.2	4.10	1.9	15 47.4	8 5.5	- 5 17.7	+1.0757	0.5588	0.0728	+90	+43
$\theta^2$ Tauri	3.6	4.10	1.9	15 42.0	8 8.0	- 5 15.3	+1.1773	0.5588	0.0727	+90	+53
264 B. Tauri	4.8	4.10	1.7	16 1.6	9 0.4	- 4 24.6	+0.8873	0.5591	0.0714	+90	+29
<div>s</div>											
119 H <sup>1</sup> . Tauri	6.2	+4.15	+ 1.1	+17 51.2	10 21.9	- 3 5.8	-0.9917	0.5596	+0.0693	-26	-73
275 B. Tauri	6.5	4.10	1.4	16 9.7	10 25.7	- 3 2.1	+0.8408	0.5596	0.0692	+90	+26
$\alpha$ Tauri (Ald.)	1.1	4.10	+0.9	16 21.2	11 28.6	- 2 1.3	+0.7040	0.5599	0.0676	+90	+17
318 B. Tauri	5.7	4.06	-1.2	17 1.9	21 17.6	+ 7 27.9	+0.5598	0.5630	0.0522	+74	+10
m Tauri	5.0	4.11	2.5	18 32.5	7 149.6	+11 50.6	-0.8423	0.5644	0.0449	-15	-71
<div>s</div>											
111 Tauri	5.1	+4.01	- 4.0	+17 18.7	9 30.9	- 4 43.8	+0.7737	0.5664	+0.0321	+90	+25
115 Tauri	5.3	4.00	4.4	17 53.7	10 45.0	- 3 32.3	+0.1860	0.5668	0.0300	+46	- 8
117 Tauri	6.0	3.98	4.4	17 10.4	11 8.7	- 3 9.5	+0.9704	0.5669	0.0293	+90	+39
119 Tauri	4.9	4.00	5.0	18 32.2	13 0.2	- 1 21.8	-0.4367	0.5673	0.0262	+10	-45
167 H <sup>1</sup> . Tauri	5.5	3.96	4.7	17 0.0	13 2.2	- 1 19.9	+1.2082	0.5673	0.0261	+90	+61
<div>s</div>											
120 Tauri	5.6	+4.00	- 5.1	+18 29.1	13 35.6	- 0 47.6	-0.3662	0.5674	+0.0252	+14	-40
122 Tauri	5.5	3.94	5.2	16 59.5	15 11.7	+ 0 45.2	+1.2684	0.5678	0.0224	+79	+71
130 Tauri	5.6	3.92	6.3	17 42.0	19 49.0	+ 5 12.9	+0.5960	0.5689	+0.0144	+78	+16
19 B. Geminorum	6.2	3.84	9.0	18 42.0	8 723.3	- 7 36.9	-0.4196	0.5709	-0.0059	+11	-42
124 H <sup>1</sup> . Orionis	5.7	3.81	8.8	17 55.6	7 48.4	- 7 12.7	+0.3987	0.5710	0.0066	+61	+ 4
<div>s</div>											
71 Orionis	5.1	+3.84	- 9.3	+19 10.9	7 57.4	- 7 4.1	-0.9355	0.5710	-0.0069	-22	-71
B. D. +17° 1191	6.5	3.78	8.8	17 12.4	8 39.9	- 6 23.0	+1.1583	0.5711	0.0081	+90	+57
287 B. Orionis	6.2	3.77	9.1	17 21.3	9 49.5	- 5 15.9	+0.9895	0.5713	0.0102	+90	+42
292 B. Orionis	6.5	3.77	9.4	17 47.9	10 52.6	- 4 14.9	+0.5059	0.5714	0.0120	+69	+11
26 Geminorum	5.2	3.66	11.2	17 43.2	20 6.4	+ 4 39.4	+0.4012	0.5726	0.0284	+61	+ 4
<div>s</div>											
74 B. Geminorum	6.2	+3.65	-11.7	+18 16.6	22 17.2	+ 6 45.6	-0.2530	0.5727	-0.0323	+20	-33



## ELEMENTS OF OCCULTATIONS, 1922. 507

NOVEMBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	Y	x'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
110 B. Geminorum	6.2	+3.56	-12.7	+17 51.8	9 4 52.9	-10 52.7	-0.0690	0.5732	-0.0439	+31	-24
41 H <sup>1</sup> . Geminorum	6.0	3.53	12.4	16 47.1	4 57.2	-10 48.6	+1.0652	0.5733	0.0440	+90	+45
$\lambda$ Geminorum	3.6	3.44	13.5	16 40.7	11 45.2	-4 15.1	+0.8339	0.5736	0.0559	+90	+27
162 B. Geminorum	5.7	3.38	14.6	17 15.0	17 44.1	+1 31.1	-0.1317	0.5737	0.0662	+27	-29
68 Geminorum	5.2	3.34	14.3	15 59.5	18 32.4	+2 17.8	+1.1325	0.5737	0.0676	+90	+49
$f$ Geminorum	5.3	+3.34	-15.3	+17 51.0	21 4.7	+4 44.7	-0.9900	0.5738	-0.0719	-26	-73
1 Cancri	6.0	3.19	15.7	15 59.7	10 44.5	-11 51.3	+0.3466	0.5737	0.0847	+56	-5
2 B. Cancri	6.0	3.20	16.0	16 43.5	5 24.7	-11 13.1	-0.4712	0.5737	0.0858	+8	-53
5 Cancri	5.9	3.18	16.1	16 40.0	6 42.8	-9 57.8	-0.5230	0.5736	0.0879	+5	-57
30 B. Cancri	6.1	3.09	16.0	14 51.4	10 52.4	-5 57.1	+0.9816	0.5735	0.0947	+90	+33
29 Cancri	5.9	+2.97	-16.7	+14 27.9	18 35.1	+1 29.3	+0.6085	0.5733	-0.1067	+79	+8
90 B. Cancri	6.3	2.94	17.4	15 34.8	21 51.2	+4 38.4	-0.9025	0.5731	0.1117	-18	-75
209 B. Cancri	6.5	2.68	17.2	11 52.7	11 32.7	-5 6.9	+1.1084	0.5724	0.1327	+90	+39
222 B. Cancri	6.3	2.64	17.3	11 49.4	16 9.9	-1 41.7	+0.6843	0.5723	0.1373	+88	+9
$\xi$ Leonis	5.1	2.54	17.5	11 38.5	22 20.7	+4 16.0	-0.0024	0.5720	0.1451	+34	-30
$\theta$ Leonis	3.8	+2.47	-17.1	+10 14.6	12 223.9	+8 10.6	+0.8290	0.5719	-0.1499	+90	+17
19 Leonis	6.4	2.44	17.7	11 55.5	5 8.3	+10 49.1	-1.3033	0.5719	0.1530	-61	-77
$R$ Leonis (var.)	6.6	2.44	17.7	11 47.2	5 11.6	+10 52.4	-1.1705	0.5719	0.1531	-40	-79
83 B. Leonis	5.9	2.38	16.8	9 17.9	9 6.7	-9 20.8	+0.7588	0.5718	0.1574	+90	+11
89 B. Leonis	6.2	2.37	16.7	8 40.9	9 51.4	-8 37.7	+1.2690	0.5718	0.1581	+90	+55
$A$ Leonis	4.6	+2.31	-17.3	+10 22.5	14 8.6	-4 29.6	-1.1419	0.5718	-0.1625	-36	-80
43 Leonis	6.3	2.23	16.1	6 56.1	20 47.7	+1 55.4	+1.2495	0.5718	0.1688	+90	+50
44 Leonis	5.9	2.21	16.8	9 10.6	21 46.1	+2 51.8	-1.1884	0.5718	0.1696	-41	-81
48 Leonis	5.2	2.15	16.0	7 21.1	11 58.4	+6 55.2	-0.0592	0.5720	0.1731	+31	-36
37 Sextantis	6.3	2.10	15.8	6 46.8	6 55.8	+11 42.1	-0.3492	0.5722	0.1769	+15	-54
56 Leonis	6.1	+2.04	-15.5	+6 35.9	11 17.1	-8 5.7	-0.9412	0.5725	-0.1799	-20	-84
$d$ Leonis	5.0	2.03	14.6	4 2.0	13 16.9	-6 10.2	+1.2833	0.5726	0.1811	+90	+54
$c$ Leonis	5.1	2.01	15.4	6 31.0	13 21.4	-6 5.8	-1.2325	0.5726	0.1812	-45	-83
80 Leonis	6.4	1.89	14.1	4 17.1	14 02.4	+4 29.8	-1.0079	0.5738	0.1879	-24	-86
83 Leonis	6.3	1.86	13.6	3 26.1	0 46.0	+4 54.5	-0.2339	0.5738	0.1869	+22	-48
$\tau$ Leonis	5.2	+1.90	-13.7	+3 16.9	1 15.3	+5 22.7	-0.1723	0.5739	-0.1871	+25	-44
89 Leonis	5.7	1.85	13.7	3 29.4	4 4.0	+8 5.5	-0.9074	0.5743	0.1881	-17	-87
9 B. Virginis	6.2	1.81	12.1	0 6.7	10 27.0	-9 45.2	+1.2671	0.5752	0.1899	+90	+50
$\beta$ Virginis	3.8	1.84	12.9	2 12.0	11 8.4	-9 5.3	-0.9533	0.5754	0.1900	-20	-88
27 B. Virginis	6.5	1.77	11.9	+0 57.7	14 48.0	-5 33.5	-0.4103	0.5760	0.1906	+12	-60
13 Virginis	5.9	+1.71	-10.8	-0 21.4	23 16.6	+2 36.9	-0.7126	0.5776	-0.1910	-5	-90
$\eta$ Virginis	4.0	1.70	10.8	0 14.2	23 48.7	+3 7.9	-0.9346	0.5778	0.1909	-19	-90
38 Virginis	6.1	1.60	8.5	3 7.9	14 4.9	-7 6.8	-0.7602	0.5811	0.1880	-8	-90
91 G. Virginis	6.5	1.62	8.4	3 48.1	14 15.6	-6 56.5	-0.1274	0.5812	0.1879	+27	-42
$k$ Virginis	5.7	1.60	8.1	3 23.6	16 49.7	-4 28.0	-1.0145	0.5819	0.1869	-26	-90
SATURN	1.0	...	...	-4 5.0	19 12.3	-2 10.6	-0.7722	0.5786	-0.1843	-10	-90
$\theta$ Virginis	4.4	+1.59	-7.2	5 7.5	21 11.4	-0 15.8	-0.1061	0.5831	0.1849	+28	-41
72 Virginis	6.1	1.55	6.0	6 4.2	5 49.5	+8 3.2	-0.7436	0.5855	0.1797	-8	-90
$l$ Virginis	4.8	1.54	6.0	5 51.3	6 28.6	+8 40.9	-1.0735	0.5857	0.1792	-31	-90
$m$ Virginis	5.2	1.55	-4.9	8 18.7	10 30.5	-11 26.2	+0.6465	0.5868	0.1762	+77	+1
NEW MOON.											
305 B. Ophiuchi	6.3	+1.72	+10.0	-18 47.2	20 17 57.3	-7 56.3	+0.4449	0.5914	-0.0090	+44	-9
6 Sagittarii	6.5	1.71	10.6	17 9.1	20 14.1	-5 44.6	-1.2514	0.5906	-0.0045	-69	-85
32 G. Sagittarii	5.7	1.72	10.9	17 9.8	22 54.0	-3 10.7	-1.2468	0.5895	+0.0007	-68	-86
64 B. Sagittarii	6.1	+1.76	+11.0	-18 41.0	21 2 4.5	-0 7.4	+0.3319	0.5881	+0.0068	+36	-16

## 508 ELEMENTS OF OCCULTATIONS, 1922.

NOVEMBER.

THE STAR'S				AT CONJUNCTION IN R.A.						Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	r	r'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m					
6 B. Scuti	5.9	+1.75	+11.3	-17 23.9	21 2 47.7	+ 0 34.3	-0.9898	0.5879	+0.0082	-42	-90
52 G. Sagittarii	6.4	1.76	11.1	18 29.4	2 53.8	+ 0 40.2	+0.1380	0.5878	0.0084	+24	-27
17 H. Sagittarii	6.4	1.77	11.1	18 38.9	3 24.8	+ 1 10.0	+0.3059	0.5876	0.0094	+35	-17
Y Sagit. (var.)	5.4	1.78	11.2	18 53.6	4 31.3	+ 2 14.0	+0.5711	0.5871	0.0115	+54	-2
85 B. Sagittarii	6.0	1.78	11.7	17 50.7	7 17.0	+ 4 53.6	-0.4734	0.5859	0.0168	-9	-67
95 B. Sagittarii	5.7	+1.80	+11.5	-18 46.6	8 13.1	+ 5 47.7	+0.5072	0.5854	+0.0186	+50	-6
100 B. Sagittarii	5.0	1.80	11.7	18 27.2	8 44.7	+ 6 18.0	+0.1837	0.5852	0.0195	+28	-24
187 B. Sagittarii	6.4	1.90	13.1	18 51.4	23 57.2	- 3 2.7	+1.1185	0.5773	0.0472	+72	+37
e Sagittarii	4.0	1.92	14.0	17 59.5	22 6 16.8	+ 3 3.4	+0.5482	0.5737	0.0580	+57	-3
45 Sagittarii	6.0	1.94	13.8	18 27.0	6 20.7	+ 3 7.2	+1.0340	0.5736	0.0581	+72	+29
54 Sagittarii	5.4	+1.97	+15.0	-16 28.1	14 41.8	+11 10.7	-0.5093	0.5687	+0.0717	-6	-69
e Sagittarii	5.2	1.98	15.2	16 18.2	15 29.9	+11 57.1	-0.6263	0.5682	0.0729	-12	-82
g Sagittarii	5.1	2.02	15.8	15 41.7	22 25.8	- 5 21.3	-0.7315	0.5640	0.0835	-17	-90
16 B. Capricorni	6.2	2.10	16.8	15 1.6	23 8 52.0	+ 4 43.8	-0.4971	0.5576	0.0982	-2	-68
$\beta$ Capricorni	3.2	2.10	16.8	15 1.4	8 58.5	+ 4 50.0	-0.4897	0.5575	0.0983	-2	-68
31 B. Capricorni	6.4	+2.14	+16.7	-15 59.7	12 32.6	+ 8 17.0	+0.9089	0.5554	+0.1030	+74	+19
27 G. Capricorni	6.2	2.13	16.8	15 18.8	13 38.7	+ 9 20.9	+0.2935	0.5547	0.1045	+43	-18
45 B. Capricorni	6.1	2.14	17.5	13 59.1	15 7.0	+10 46.3	-0.9745	0.5539	0.1063	-31	-90
$\tau$ Capricorni	5.2	2.17	17.1	15 13.5	17 29.3	-10 56.0	+0.6095	0.5524	0.1093	+67	0
95 B. Capricorni	5.9	2.24	17.7	14 46.8	24 2 43.4	- 2 0.0	+1.1958	0.5470	0.1201	+76	+44
53 B. Aquarii	6.5	+2.31	+18.3	-13 31.3	11 5.9	+ 6 6.5	+0.8825	0.5424	+0.1288	+76	+17
18 Aquarii	5.5	2.35	18.5	13 12.5	15 6.6	+ 9 59.7	+1.0704	0.5402	0.1328	+77	+31
72 B. Aquarii	6.5	2.35	19.0	11 54.1	17 6.8	+11 56.2	-0.0800	0.5392	0.1340	+25	-39
137 B. Capricorni	6.2	2.40	19.4	10 55.4	22 41.6	- 6 39.4	-0.3790	0.5365	0.1366	+10	-58
c <sup>a</sup> Capricorni	6.3	2.43	19.9	9 37.9	25 2 6.2	- 3 21.1	-1.3065	0.5348	0.1424	-65	-81
$\lambda$ Capricorni	5.5	+2.44	+19.2	-11 43.3	2 13.0	- 3 14.4	+0.9880	0.5348	+0.1425	+79	+24
96 B. Aquarii	6.5	2.40	19.6	10 40.4	5 46.8	+ 0 12.7	+0.3595	0.5332	0.1454	+53	-15
$\theta$ Aquarii	4.3	2.58	20.4	8 10.0	17 37.1	+11 41.8	-0.6131	0.5283	0.1530	-2	-78
150 B. Aquarii	6.0	2.57	20.0	9 25.4	17 38.4	+11 43.1	+0.7686	0.5283	0.1536	+81	+9
e Aquarii	5.3	2.59	20.4	8 12.5	19 21.2	-10 37.1	-0.3007	0.5276	0.1547	+16	-53
170 B. Aquarii	6.0	+2.61	+20.6	-7 35.0	21 4.7	- 8 56.7	-0.7184	0.5270	+0.1557	-8	-90
186 B. Aquarii	6.1	2.66	20.6	6 56.9	26 1 5.6	- 5 3.0	-0.7871	0.5256	0.1580	-12	-90
167 G. Aquarii	6.3	2.68	20.2	8 17.8	4 45.4	- 1 29.6	+1.2795	0.5245	0.1599	+82	+53
67 Aquarii	6.4	2.70	20.4	7 22.0	7 18.4	+ 0 58.9	+0.6644	0.5238	0.1612	+80	+2
252 B. Aquarii	5.8	2.77	21.0	5 23.9	13 34.5	+ 7 4.0	-0.4847	0.5221	0.1640	+7	-66
197 G. Aquarii	6.3	+2.78	+21.0	-5 13.3	14 41.0	+ 8 8.7	-0.4969	0.5218	+0.1645	+6	-67
263 B. Aquarii	6.1	2.81	20.9	5 7.5	16 55.1	+10 18.9	-0.2349	0.5213	0.1653	+21	-48
293 B. Aquarii	6.5	2.88	21.0	3 55.0	27 0 20.9	- 6 28.1	-0.3328	0.5199	0.1678	+16	-55
316 B. Aquarii	5.5	2.92	20.6	4 20.3	2 49.5	- 4 3.8	+0.5505	0.5195	0.1685	+71	-4
14 Piscium	5.9	3.00	21.2	1 40.4	10 13.7	+ 3 7.7	-1.1440	0.5186	0.1702	-36	-90
60 B. Piscium	6.0	+3.12	+21.0	-0 19.1	21 14.9	-10 9.9	-0.7585	0.5179	+0.1717	-8	-90
80 B. Piscium	6.3	3.17	20.3	-0 55.8	2 44.7	- 4 49.5	+0.8635	0.5179	0.1720	+90	+14
98 B. Piscium	6.3	3.26	20.4	+1 15.7	9 32.7	+ 1 46.9	-0.3941	0.5182	0.1719	+13	-59
44 Piscium	6.0	3.30	20.1	1 30.8	13 36.8	+ 5 43.9	+0.0249	0.5186	0.1716	+36	-33
155 B. Piscium	6.5	3.45	19.0	2 58.0	29 3 23.6	- 4 52.8	+0.7664	0.5205	0.1693	+90	+9
73 Piscium	6.2	+3.56	+18.9	+5 14.6	10 33.8	+ 2 4.9	-0.5448	0.5219	+0.1673	+5	-70
77 Piscium	6.4	3.55	18.5	4 29.9	11 3.8	+ 2 34.1	+0.3629	0.5220	0.1672	+57	-14
e Piscium	5.6	3.56	18.5	5 14.6	12 25.0	+ 3 52.9	-0.2338	0.5224	0.1667	+22	-48
88 Piscium	6.2	3.62	18.6	6 35.3	15 43.9	+ 7 6.1	-1.1694	0.5232	0.1656	-38	-84
263 B. Piscium	6.4	3.72	17.8	7 33.8	22 52.5	- 9 57.7	-1.0718	0.5252	0.1626	-30	-83
$\mu$ Piscium	5.0	+3.70	+17.2	+5 44.8	23 49.2	- 9 2.8	+1.0850	0.5254	+0.1622	+90	+32

# ELEMENTS OF OCCULTATIONS, 1922. 509

## NOVEMBER.

THE STAR'S				AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>z'</i>	<i>y'</i>	N. S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m				
o Piscium	4.5	+3.82	+16.8	+ 8 46.2	30 7 41.9	- 1 23.8	-0.9856	0.5280	+0.1582	-23 -8.2

## DECEMBER.

ξ Arietis	5.5	+4.02	+13.6	+10 15.7	1 3 46.3	- 5 55.6	+0.4229	0.5357	+0.1446	+62 - 8
25 Arietis	6.5	+4.00	+13.2	+ 9 51.4	5 4.8	- 4 39.5	+1.0551	0.5362	+0.1435	+90 +32
31 Arietis	5.7	4.13	12.8	12 6.8	9 39.0	- 0 13.6	-0.7698	0.5382	0.1396	- 9 -78
38 Arietis	5.2	4.15	12.0	12 7.3	13 47.3	+ 3 47.0	-0.2078	0.5401	0.1359	+23 -42
147 B. Arietis	5.8	4.24	10.0	12 53.4	2 0 17.7	-10 2.3	+0.3283	0.5449	0.1255	+55 -11
30 B. Tauri	6.4	4.38	7.0	15 10.7	15 20.5	+ 4 31.7	-0.3964	0.5520	0.1081	+13 -50
179 B. Tauri	5.9	+4.44	+ 3.7	+14 57.4	3 5 21.3	- 5 55.1	+1.2286	0.5584	+0.0895	+90 +57
180 B. Tauri	6.1	4.50	3.8	17 8.0	5 28.0	- 5 48.6	-1.1098	0.5585	0.0893	-36 -73
193 B. Tauri	6.2	4.50	3.3	17 4.7	7 33.6	- 3 47.2	-0.8663	0.5594	0.0863	-16 -73
48 Tauri	6.3	4.46	2.8	15 12.4	9 4.9	- 2 18.9	+1.2795	0.5601	0.0841	+80 +68
γ Tauri	3.9	4.47	2.4	15 26.5	10 55.7	- 0 31.8	+1.1801	0.5609	0.0814	+90 +52
δ Tauri	3.9	+4.53	+ 2.1	+17 21.7	12 20.7	+ 0 50.3	-0.7725	0.5615	+0.0793	-10 -73
63 Tauri	5.7	4.51	2.0	16 35.8	12 34.6	+ 1 3.8	+0.0682	0.5616	0.0790	+39 -19
64 Tauri	4.9	4.53	1.9	17 15.9	12 52.7	+ 1 21.2	-0.6266	0.5617	0.0785	- 1 -65
68 Tauri	4.3	4.55	1.8	17 45.1	13 30.6	+ 1 57.9	-1.0999	0.5620	0.0776	-35 -73
70 Tauri	6.4	4.48	1.7	15 45.9	13 35.8	+ 2 2.9	+1.0432	0.5620	0.0775	+90 +39
75 Tauri	5.2	+4.50	+ 1.5	+16 11.2	14 53.0	+ 3 17.5	+0.6871	0.5626	+0.0755	+90 +15
θ <sup>1</sup> Tauri	4.2	4.49	1.4	15 47.4	14 56.8	+ 3 21.1	+1.1176	0.5626	0.0754	+90 +46
θ <sup>2</sup> Tauri	3.6	4.49	1.4	15 42.0	14 59.3	+ 3 23.6	+1.2186	0.5627	0.0754	+90 +57
264 B. Tauri	4.8	4.50	1.2	16 1.5	15 51.0	+ 4 13.5	+0.9322	0.5630	0.0741	+90 +31
119 H <sup>1</sup> Tauri	6.2	4.55	0.9	17 51.2	17 11.5	+ 5 31.3	-0.9330	0.5635	0.0720	-21 -73
275 B. Tauri	6.5	+4.50	+ 0.9	+16 9.7	17 15.2	+ 5 34.9	+0.8888	0.5636	+0.0719	+90 +29
a Tauri (Ald.)	1.1	4.51	+ 0.4	16 21.2	18 17.3	+ 6 34.9	+0.7550	0.5640	0.0703	+90 +20
318 B. Tauri	5.7	4.53	- 1.8	17 1.9	4 3 57.9	- 8 4.3	+0.6319	0.5678	0.0548	+83 +14
m Tauri	5.0	4.61	2.9	18 32.5	8 25.8	- 3 45.6	-0.7521	0.5694	0.0474	- 9 -72
111 Tauri	5.1	4.54	4.8	17 18.7	15 59.8	+ 3 32.5	+0.8692	0.5718	0.0345	+90 +31
115 Tauri	5.3	+4.54	- 5.2	+17 53.7	17 12.6	+ 4 42.8	+0.2876	0.5722	+0.0323	+53 - 3
117 Tauri	6.0	4.52	5.3	17 10.4	17 36.0	+ 5 5.4	+1.0678	0.5723	0.0317	+90 +46
119 Tauri	4.9	4.55	5.7	18 32.2	19 25.6	+ 6 51.2	-0.3266	0.5728	0.0285	+16 -38
120 Tauri	5.6	4.55	5.9	18 29.1	20 0.4	+ 7 24.8	-0.2554	0.5731	0.0275	+20 -33
130 Tauri	5.6	4.50	7.4	17 41.9	5 2 7.5	-10 41.2	+0.7128	0.5747	+0.0166	+90 +23
19 B. Geminorum	6.2	+4.48	-10.2	+18 41.9	13 29.9	+ 0 17.1	-0.2745	0.5769	-0.0040	+19 -32
124 H <sup>1</sup> Orionis	5.7	4.45	10.2	17 55.6	13 54.6	+ 0 40.9	+0.5395	0.5770	0.0047	+73 +14
71 Orionis	5.1	4.48	10.6	19 10.9	14 3.4	+ 0 49.4	-0.7863	0.5770	0.0050	-11 -71
287 B. Orionis	6.2	4.42	10.6	17 21.2	15 53.6	+ 2 35.6	+1.1306	0.5773	0.0048	+90 +50
292 B. Orionis	6.5	4.43	10.9	17 47.9	16 55.7	+ 3 35.5	+0.6518	0.5775	0.0103	+86 +24
26 Geminorum	5.2	+4.37	-13.0	+17 43.1	6 2 0.1	-11 39.6	+0.5644	0.5785	-0.0269	+75 +13
74 B. Geminorum	6.2	4.36	13.5	18 16.5	4 8.8	- 9 35.5	-0.0825	0.5786	0.0308	+30 -23
110 B. Geminorum	6.2	4.30	14.8	17 51.8	10 38.1	- 3 20.3	+0.1117	0.5789	0.0427	+41 -13
41 H <sup>1</sup> Geminorum	6.0	4.26	14.6	16 47.0	10 42.3	- 3 16.1	+1.2405	0.5789	0.0428	+88 +64
λ Geminorum	3.6	4.20	16.0	16 40.7	17 24.2	+ 3 11.3	+1.0218	0.5789	0.0548	+90 +40
162 B. Geminorum	5.7	+4.16	-17.2	+17 14.9	23 18.0	+ 8 52.3	+0.0696	0.5787	-0.0653	+39 -18
f Geminorum	5.3	4.13	17.9	17 50.9	7 2 36.0	-11 56.7	-0.7809	0.5785	0.0711	-11 -73
1 Cancri	6.0	4.00	18.8	15 59.7	10 11.0	- 4 38.0	+0.5625	0.5779	0.0840	+74 + 8
2 B. Cancri	6.0	4.01	19.0	16 43.5	10 50.1	- 4 0.3	-0.2524	0.5778	0.0851	+20 -38
3 Cancri	5.7	4.02	19.4	17 31.1	11 48.3	- 3 4.3	-1.1606	0.5778	0.0867	-41 -73
5 Cancri	5.9	+4.00	-19.3	+16 40.0	12 7.4	- 2 45.8	-0.3024	0.5777	-0.0872	+18 -42

## 510 ELEMENTS OF OCCULTATIONS, 1922.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	P	z'	y'	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
30 B. Cancrī	6.1	+3.91	-19.4	+14 51.3	7 16 14.7	+ 1 12.6	+1.2048	0.5772	-0.0940	+90	+54
29   Cancrī	5.9	3.81	20.4	14 27.9	23 53.7	+ 8 35.2	+0.8425	0.5761	0.1061	+90	+22
90 B. Cancrī	6.3	3.79	21.1	15 34.7	8 3 8.6	+11 43.1	-0.6642	0.5756	0.1111	- 3	-71
222 B. Cancrī	6.3	3.50	21.8	11 49.4	21 24.9	+ 5 20.5	+0.9419	0.5725	0.1366	+90	+26
ξ   Leonis	5.1	3.41	22.2	11 38.4	9 3 36.7	+11 19.3	+0.2577	0.5714	0.1443	+50	-16
o   Leonis	3.8	+3.34	-21.9	+10 14.5	7 41.1	- 8 44.8	+1.0952	0.5707	-0.1491	+90	+36
18   Leonis	5.8	3.32	22.6	12 9.8	9 58.8	- 6 32.0	-1.2219	0.5703	0.1516	-46	-78
19   Leonis	6.4	3.31	22.5	11 55.4	10 26.6	- 6 5.2	-1.0458	0.5702	0.1521	-28	-79
R   Leonis (var.)	4.6	3.32	22.5	11 47.1	10 29.9	- 6 2.0	-0.9124	0.5702	0.1522	-18	-79
83 B. Leonis	5.9	3.24	21.8	9 17.8	14 26.8	- 2 13.4	+1.0287	0.5696	0.1564	+90	+30
A   Leonis	4.6	+3.18	-22.4	+10 22.5	19 31.7	+ 2 40.9	-0.8818	0.5688	-0.1614	-16	-80
44   Leonis	5.9	3.08	22.0	9 10.5	10 315.0	+10 8.0	-0.9288	0.5678	0.1684	-19	-81
48   Leonis	5.2	3.02	21.3	7 21.0	7 31.2	- 9 44.7	+0.2093	0.5673	0.1718	+47	-21
37   Sextantis	6.3	2.95	21.1	6 46.7	12 33.7	- 4 52.6	-0.0839	0.5668	0.1754	+30	-38
56   Leonis	6.1	2.89	20.9	6 35.8	17 0.1	- 0 35.4	-0.6831	0.5665	0.1783	- 3	-82
c   Leonis	5.1	+2.86	-20.8	+ 6 30.9	19 6.9	+ 1 26.9	-0.9782	0.5664	-0.1795	-22	-84
80   Leonis	6.4	2.73	19.5	4 17.1	11 6 21.2	-11 42.0	-0.7583	0.5661	0.1849	- 8	-86
83   Leonis	6.3	2.69	19.0	3 26.0	6 47.4	-11 16.7	+0.0246	0.5661	0.1851	+36	-33
τ   Leonis	5.2	2.73	19.1	3 16.8	7 17.5	-10 47.6	+0.0867	0.5661	0.1852	+40	-29
89   Leonis	5.7	2.68	19.1	3 29.3	10 10.6	- 8 0.4	-0.6596	0.5662	0.1862	- 2	-82
β   Virginis	3.8	+2.66	-18.2	+ 2 12.0	17 26.8	- 0 59.3	-0.7127	0.5665	-0.1880	- 5	-88
27 B. Virginis	6.5	2.58	17.2	+ 0 57.6	21 12.9	+ 2 39.0	-0.1665	0.5668	0.1886	+25	-44
13   Virginis	5.9	2.49	16.0	- 0 21.5	12 5 57.3	+11 5.2	-0.4834	0.5678	0.1889	+ 8	-66
7   Virginis	4.0	2.48	16.0	0 14.3	6 30.5	+11 37.2	-0.7094	0.5678	0.1889	- 5	-90
38   Virginis	6.1	2.34	13.4	3 8.0	21 15.5	+ 1 51.4	-0.5540	0.5704	0.1860	+ 4	-72
91 G. Virginis	6.5	+2.37	-13.2	- 3 48.2	21 26.6	+ 2 2.1	+0.0881	0.5704	-0.1860	+39	-30
k   Virginis	5.7	2.33	12.9	3 23.7	13 0 6.0	+ 4 35.9	-0.8170	0.5710	0.1850	-12	-90
48   Virginis	6.5	2.31	12.8	3 14.8	1 58.2	+ 6 24.1	-1.3111	0.5714	0.1843	-59	-85
0   Virginis	4.4	2.31	11.9	5 7.6	4 37.0	+ 8 57.3	+0.0976	0.5720	0.1831	+39	-29
SATURN	1.0	...	...	4 58.4	6 45.0	+11 0.8	-0.4463	0.5697	0.1810	+ 9	-63
72   Virginis	6.1	+2.24	-10.3	- 6 4.3	13 33.4	- 6 25.2	-0.5663	0.5744	-0.1781	+ 2	-73
l   Virginis	4.8	2.22	10.3	5 51.4	14 14.0	- 5 46.1	-0.9026	0.5746	0.1777	-18	-90
m   Virginis	5.2	2.23	8.9	8 18.7	18 24.5	- 1 44.6	+0.8357	0.5758	0.1748	+82	+13
598 B. Virginis	6.1	2.16	8.3	7 40.7	14 0 11.1	+ 3 49.7	-0.8007	0.5774	0.1703	-13	-90
623 B. Virginis	6.5	2.15	7.3	8 53.1	4 12.6	+ 7 42.5	-0.2629	0.5787	0.1667	+17	-50
95   Virginis	5.4	+2.14	- 7.1	- 8 56.6	5 13.4	+ 8 41.2	-0.3726	0.5790	-0.1658	+12	-58
96   Virginis	6.5	2.16	6.7	9 58.1	6 11.7	+ 9 37.3	+0.4978	0.5793	0.1649	+63	- 7
x   Virginis	4.3	2.14	6.3	9 54.8	7 51.5	+11 13.5	+0.1702	0.5798	0.1633	+41	-25
2   Libræ	6.3	2.13	5.5	11 21.6	12 20.4	- 8 27.5	+0.9062	0.5812	0.1587	+79	+18
4 G. Libræ	6.5	2.12	5.4	11 19.1	12 52.5	- 7 56.4	+0.7785	0.5814	0.1581	+79	+ 9
6 B. Libræ	6.2	+2.04	- 4.0	-11 58.5	18 7.4	- 2 53.0	+0.6269	0.5831	-0.1522	+72	0
22 B. Libræ	6.4	2.08	3.6	12 30.8	22 41.6	+ 1 31.1	+0.4864	0.5845	0.1466	+60	- 8
13   Libræ	5.7	2.03	- 3.3	11 34.9	1 125.4	+ 4 8.8	-0.8483	0.5854	0.1431	-19	-90
γ   Libræ	4.0	1.98	+ 0.2	14 31.8	18 32.2	- 3 22.6	-0.1185	0.5902	0.1184	+20	-42
190 B. Libræ	6.5	1.96	0.7	14 47.6	21 47.7	- 0 14.4	-0.2294	0.5909	0.1132	+14	-49
η   Libræ	5.5	+1.97	+ 0.9	-15 25.5	22 3.7	+ 0 1.0	+0.3789	0.5910	-0.1128	+49	-14
NEW MOON.					20 0 22.4	- 1 20.7	-0.6930	0.5743	+0.0704	-16	-90
54   Sagittarii	5.4	+1.86	+14.3	-16 28.2	1 9.7	- 0 35.1	-0.8112	0.5739	0.0717	-24	-90
e   Sagittarii	5.2	1.86	14.4	16 18.2							
9   Sagittarii	5.1	+1.87	+15.0	-15 41.7	7 59.0	+ 5 59.8	-0.9297	0.5701	+0.0825	-30	-90

# ELEMENTS OF OCCULTATIONS, 1922. 511

DECEMBER.

THE STAR'S				AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, H	$\gamma$	$\gamma'$	N.	S.
		$\Delta\alpha$	$\Delta\delta$		d h m	h m <sup>s</sup>				
16 B. Capricorni	6.2	+1.91	+15.8	-15 1.6	20 18 14.1	- 8 6.2	-0.7165	0.5641	+0.0976	-15 -90
$\beta$ Capricorni	3.2	1.91	15.8	15 1.5	18 20.5	- 8 0.1	-0.7094	0.5640	0.0978	-15 -90
31 B. Capricorni	6.4	1.93	15.8	15 59.8	21 50.6	- 4 37.1	+0.6742	0.5619	0.1026	+71 +3
27 G. Capricorni	6.2	1.92	15.9	15 18.8	22 55.5	- 3 34.3	+0.0605	0.5613	0.1041	+29 -31
45 B. Capricorni	6.1	1.93	16.4	13 59.1	21 0 22.2	- 2 10.5	-1.2022	0.5604	0.1060	-52 -90
$\tau$ Capricorni	5.2	+1.95	+16.1	-15 13.5	2 41.7	+ 0 4.3	+0.3677	0.5590	+0.1090	+48 -14
95 B. Capricorni	5.9	1.99	16.6	14 46.8	11 45.2	+ 8 49.8	+0.9343	0.5536	0.1201	+76 +20
53 B. Aquarii	6.5	2.04	17.0	13 31.3	19 57.9	- 7 13.5	+0.6101	0.5488	0.1291	+69 0
18 Aquarii	5.5	2.07	17.2	13 12.5	23 54.0	- 3 25.0	+0.7910	0.5465	0.1331	+77 +11
72 B. Aquarii	6.5	2.07	17.6	11 54.1	22 1 51.9	- 1 30.8	-0.3545	0.5454	0.1351	+10 -57
137 B. Capricorni	6.2	+2.11	+17.9	-10 55.4	7 20.4	+ 3 47.3	-0.6589	0.5424	+0.1401	- 6 -84
$\lambda$ Capricorni	5.5	2.14	17.7	11 43.3	10 48.0	+ 7 8.4	+0.6948	0.5406	0.1431	+78 +4
96 B. Aquarii	6.5	2.16	18.0	10 40.5	14 17.9	+10 31.7	+0.0664	0.5387	0.1460	+35 -31
$\theta$ Aquarii	4.3	2.27	18.6	8 10.0	23 1 56.3	- 2 11.2	-0.9121	0.5331	0.1544	-20 -90
150 B. Aquarii	6.0	2.25	18.2	9 25.4	1 57.6	- 2 9.9	+0.4611	0.5331	0.1544	+61 -9
$\rho$ Aquarii	5.3	+2.28	+18.6	- 8 12.5	3 38.8	- 0 31.7	-0.6031	0.5324	+0.1554	- 1 -77
170 B. Aquarii	6.0	2.29	18.8	7 35.0	5 20.7	+ 1 7.1	-1.0199	0.5316	0.1565	-28 -90
186 B. Aquarii	6.1	2.34	18.7	6 56.9	9 18.0	+ 4 57.3	-1.0914	0.5299	0.1588	-33 -90
167 G. Aquarii	6.3	2.36	18.3	8 17.9	12 54.9	+ 8 27.7	+0.9613	0.5285	0.1607	+82 +21
67 Aquarii	6.4	2.38	18.5	7 22.0	15 25.8	+10 54.1	+0.3480	0.5275	0.1619	+54 -16
252 B. Aquarii	5.8	+2.44	+19.0	- 5 23.9	21 37.2	- 7 5.4	-0.7984	0.5253	+0.1647	-11 -90
197 G. Aquarii	6.3	2.45	19.0	5 13.3	22 43.1	- 6 1.5	-0.8111	0.5250	0.1651	-12 -90
263 B. Aquarii	6.1	2.48	18.9	5 7.5	24 0 55.7	- 3 52.7	-0.5513	0.5244	0.1660	+ 3 -72
293 B. Aquarii	5.5	2.55	19.0	3 55.0	8 17.2	+ 3 15.9	-0.6510	0.5222	0.1684	- 2 -82
316 B. Aquarii	6.5	2.60	18.6	4 20.3	10 44.4	+ 5 38.8	+0.2282	0.5215	0.1691	+48 -22
60 B. Piscium	6.0	+2.80	+18.9	- 0 19.2	25 5 3.5	- 0 33.6	-1.0754	0.5183	+0.1722	-30 -90
80 B. Piscium	6.3	2.85	18.2	- 0 55.9	10 32.4	+ 4 45.9	+0.5448	0.5178	0.1724	+71 -5
98 B. Piscium	6.3	2.95	18.4	+ 1 15.6	17 20.1	+11 22.0	-0.7071	0.5175	0.1722	- 5 -89
44 Piscium	6.0	2.99	18.1	1 30.8	21 24.3	- 8 40.8	-0.2861	0.5175	0.1719	+19 -52
155 B. Piscium	6.5	3.17	17.1	2 58.0	26 11 13.0	+ 4 44.3	+0.4664	0.5184	0.1696	+65 -9
73 Piscium	6.2	+3.29	+17.1	+ 5 14.6	18 25.2	+11 44.1	-0.8368	0.5195	+0.1676	-13 -85
77 Piscium	6.4	3.28	16.7	4 29.9	18 55.3	-11 46.6	+0.0714	0.5195	0.1675	+39 -30
$\epsilon$ Piscium	5.6	3.29	16.7	5 14.5	20 17.0	-10 27.3	-0.5237	0.5198	0.1670	+ 6 -68
$\mu$ Piscium	5.0	3.47	15.5	5 44.8	27 7 45.5	+ 0 41.3	+0.8104	0.5223	0.1625	+90 +12
$\sigma$ Piscium	4.5	3.60	15.4	8 46.2	15 41.7	+ 8 23.7	-1.2498	0.5246	0.1585	-48 -82
$\xi^1$ Ceti	4.5	+3.75	+12.9	+ 8 29.1	28 5 56.3	- 1 46.9	+1.2620	0.5296	+0.1497	+90 +53
$\xi$ Arietis	5.5	3.87	12.4	10 15.7	11 56.0	+ 4 2.0	+0.1947	0.5320	0.1453	+46 -20
25 Arietis	6.5	3.85	11.8	9 51.4	13 15.2	+ 5 18.8	+0.8300	0.5326	0.1443	+90 +16
31 Arietis	5.7	4.00	11.8	12 6.8	17 51.6	+ 9 46.8	-0.9872	0.5346	0.1405	-24 -78
85 Ceti	6.3	3.96	10.8	10 24.8	20 49.1	-11 21.1	+1.2856	0.5360	0.1380	+86 +60
38 Arietis	5.2	+4.03	+11.0	+12 7.3	22 1.8	-10 10.7	-0.4165	0.5365	+0.1369	+11 -55
147 B. Arietis	5.8	4.16	9.0	12 53.4	29 8 36.8	+ 0 4.6	+0.1419	0.5417	0.1268	+43 -21
30 B. Tauri	6.4	4.38	6.3	15 10.6	23 44.6	- 9 16.4	-0.5483	0.5495	0.1098	+ 4 -62
179 B. Tauri	5.9	4.50	2.9	14 57.3	30 13 47.6	+ 4 19.1	+1.1072	0.5571	0.0916	+90 +13
180 B. Tauri	6.1	4.57	3.3	17 8.0	13 54.3	+ 4 25.6	-1.2262	0.5571	0.0914	-50 -73
193 B. Tauri	6.2	+4.58	+ 2.8	+17 4.7	16 0.0	+ 6 27.1	-0.9779	0.5582	+0.0885	-24 -73
48 Tauri	6.3	4.54	2.0	15 12.4	17 31.4	+ 7 55.5	+1.1667	0.5591	0.0863	+90 +50
$\gamma$ Tauri	3.9	4.56	1.6	15 26.4	19 22.2	+ 9 42.6	+1.0718	0.5600	0.0837	+90 +41
$\delta$ Tauri	3.9	4.64	1.6	17 21.7	20 47.1	+11 4.6	-0.8721	0.5608	0.0816	-17 -73
63 Tauri	5.7	4.61	1.4	16 35.8	21 1.0	+11 18.1	-0.0331	0.5609	0.0813	+33 -25
64 Tauri	4.9	+4.64	+ 1.4	+17 15.9	21 19.1	+11 35.5	-0.7253	0.5610	+0.0808	- 7 -73

512 ELEMENTS OF OCCULTATIONS, 1922.

DECEMBER.

THE STAR'S					AT CONJUNCTION IN R.A.					Limiting Parallels.	
Name.	Mag.	Reductions from 1922.0		Apparent Declina- tion.	Greenwich Mean Time.	Hour Angle, <i>H</i>	<i>Y</i>	<i>x'</i>	<i>y'</i>	N.	S.
		$\Delta\alpha$	$\Delta\delta$								
68 Tauri	4.3	<sup>s</sup> +4.66	<sup>"</sup> + 1.4	<sup>°</sup> +17 45.1	30 21 56.9	-11 48.0	-1.1958	0.5614	+0.0799	-46	-73
70 Tauri	6.4	4.59	1.0	15 45.8	22 2.2	-11 42.8	+0.9416	0.5614	0.0798	+90	+31
75 Tauri	5.2	4.61	0.8	16 11.2	23 19.2	-10 28.5	+0.5896	0.5621	0.0779	+77	+ 9
$\theta^1$ Tauri	4.2	4.60	0.7	15 47.4	23 23.0	-10 24.8	+1.0190	0.5621	0.0778	+90	+37
$\theta^2$ Tauri	3.6	4.60	0.6	15 42.0	23 25.5	-10 22.4	+1.1198	0.5621	0.0777	+90	+46
264 B. Tauri	4.8	+4.62	+ 0.5	+16 1.5	31 0 17.2	- 9 32.5	+0.8362	0.5626	+0.0764	+90	+25
85 Tauri	6.0	4.61	0.3	15 41.1	0 53.0	- 8 57.9	+1.2454	0.5629	0.0755	+89	+62
119 H <sup>1</sup> Tauri	6.2	4.68	0.5	17 51.2	1 37.4	- 8 14.9	-1.0199	0.5633	0.0744	-28	-73
275 B. Tauri	6.5	4.62	+ 0.2	16 9.6	1 41.1	- 8 11.3	+0.7964	0.5634	0.0743	+90	+22
<i>a</i> Tauri ( <i>Ald.</i> )	1.1	4.64	- 0.2	16 21.2	2 43.0	- 7 11.5	+0.6655	0.5638	0.0727	+87	+14
89 Tauri	5.8	+4.63	- 0.4	+15 52.7	3 44.2	- 6 12.5	+1.2470	0.5644	+0.0711	+88	+62
318 B. Tauri	5.7	4.71	2.5	17 1.9	12 21.5	+ 2 7.1	+0.5666	0.5686	0.0574	+75	+10
<i>m</i> Tauri	5.0	+4.83	- 3.4	+18 32.4	16 47.7	+ 6 24.1	-0.8001	0.5708	+0.0500	-12	-72

## OCCULTATIONS VISIBLE AT GREENWICH.

\* \* The Angles are reckoned from the North Point and Vertex of the Moon's limb towards the East.

Date.	Star's Name.	Mag.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Vertex.			N. Point.	Vertex.
			h m	h m			h m	h m		
Jan. 2	$\theta$ Aquarii	4.3	3 0	8 13	88	51				
3	252 B. Aquarii	5.8					23 15	4 25	218	214
3	197 G. Aquarii	6.3	23 42	4 51	112	103	0 37	5 46	198	180
6	W.Z.C. 80	7.2	5 10	10 7	81	46				
11	130 Tauri	5.6	1 11	5 49	145	185	1 42	6 21	205	244
13	30 B. Cancri	6.1	11 2	15 31	57	23	11 43	16 11	336	299
14	$\alpha$ Cancri	4.3	4 21	8 47	146	185	5 5	9 31	239	276
15	89 B. Leonis	6.2	4 31	8 53	47	86	5 1	9 23	344	23
15	$\pi$ Leonis	4.9	5 19	9 41	81	119	6 14	10 36	312	347
17	31 B. Virginis	6.4	9 27	13 40	71	97	10 18	14 31	337	355
18	B.D.—6° 3705	7.0					12 33	16 42	255	259
20	$\mu$ Libræ	5.4	13 21	17 22	53	67	14 4	18 4	344	351
22	W.Z.C. 1070	7.1					15 37	19 30	238	247
Feb. 1	W.Z.C. 12	7.3	3 10	6 26	78	48				
2	73 Piscium	6.2	4 46	7 57	105	70	5 43	8 54	217	179
4	38 Arietis	5.2	7 4	10 6	115	77	7 55	10 58	222	182
5	B.D.+14° 565	7.0	2 44	5 43	23	33				
5	30 B. Tauri	6.4	8 8	11 6	6	326	8 23	11 21	338	298
6	63 Tauri	5.7	2 29	5 25	67	93	3 44	6 39	270	279
6	B.D.+16° 602	6.9	4 42	7 37	41	36				
6	B.D.+16° 625	7.0	9 13	12 8	33	353				
7	115 Tauri	5.3	6 16	9 7	62	48	7 22	10 13	297	269
8	292 B. Orionis	6.5	3 19	6 7	73	109	4 26	7 14	285	311
8	W.Z.C. 443	6.8	4 4	6 51	115	145				
9	$\lambda$ Geminorum	3.6	1 32	4 16	77	117	2 27	5 11	288	328
9	68 Geminorum	5.2	9 14	11 57	132	107	10 14	12 57	254	221
10	84 B. Cancri	6.4	8 28	11 7	131	131	9 32	12 11	262	247
10	A <sup>1</sup> Cancri	5.5	13 3	15 41	101	62	13 59	16 37	293	253
10	A <sup>2</sup> Cancri	5.7	15 2	17 40	177	138	15 18	17 56	214	176
11	$\delta$ Leonis	5.2	7 14	9 49	159	186	7 56	10 31	237	257
14	W.Z.C. 808	7.1					9 49	12 12	323	349
17	$\sigma$ Libræ	6.2	10 58	13 9	91	125	12 0	14 11	303	332
21	B.D.—18° 5155	7.0					15 4	16 59	209	241
Mar. 2	W.Z.C. 97	6.7	5 0	6 21	126	92				
5	Lalande 7967	6.9	10 15	11 23	104	64				
8	41 H <sup>1</sup> Geminorum	6.0	8 20	9 17	126	106	9 24	10 21	254	223
8	51 Geminorum	5.3	13 27	14 23	129	90	14 12	15 8	251	214
10	$\alpha$ Cancri	4.3	6 30	7 19	134	163	7 30	8 20	256	275
11	89 B. Leonis	6.2	6 29	7 14	63	97	7 15	8 0	332	2
11	$\pi$ Leonis	4.9	7 28	8 13	87	115	8 31	9 16	312	330
13	31 B. Virginis	6.4	9 22	9 59	120	146	10 29	11 6	288	304
15	W.Z.C. 901	6.7					17 11	17 40	254	225
17	$\theta$ Libræ	4.4	11 24	11 45	73	107	12 18	12 39	316	346
19	W.Z.C. 1154	7.3					17 17	17 29	273	278

## OCCULTATIONS VISIBLE AT GREENWICH.

\* \* The Angles are reckoned from the North Point and Vertex of the Moon's limb towards the East.

Date.	Star's Name.	Mag.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Vertex.			N. Point.	Vertex.
Apr.	1 $\alpha$ Tauri (Aldeb.)	1.1	h m	h m	14°	179	h m	h m	199	236
	2 318 B. Tauri	5.7	11 53	11 11	80	43	1 0	24 20		
	3 130 Tauri	5.6	9 41	8 55	70	30	10 38	9 53	299	258
	6 84 B. Cancri	6.4	6 47	5 50	120	143	7 58	7 1	268	276
	6 A <sup>1</sup> Cancri	5.5	11 58	11 0	96	99	12 59	12 2	299	297
	6 A <sup>2</sup> Cancri	5.7	14 5	13 7	161	121	14 37	13 39	231	192
	7 $\beta$ Leonis	5.2	7 17	6 16	144	170	8 14	7 13	251	267
	7 B.D.+9° 2226	6.7	12 19	11 18	118	78				
	10 W.Z.C. 808	7.1	10 46	9 33	76	94				
	13 B.D.—15° 4118	6.9					13 33	12 7	0	18
	16 Y Sagittarii (var.)	5.4	14 47	13 10	73	103	15 56	14 19	291	312
	17 $\rho$ Sagittarii	4.0	19 14	17 32	108	109	20 26	18 44	231	220
May	22 293 B. Aquarii	5.5					17 59	15 57	277	315
	2 W.Z.C. 519	6.7	14 19	11 39	118	80				
	2 68 Geminorum	5.2	14 22	11 42	75	38				
	5 B.A.C. 3529	7.0	14 13	11 21	63	27				
	5 155 B. Leonis	6.5	16 1	13 9	184	145	16 15	13 22	214	175
	6 B.D.+3° 2475	6.9	13 8	10 12	62	40				
	6 76 Leonis	6.0	15 45	12 49	87	50	16 38	13 42	313	275
	7 B.D.—1° 2632	6.8	14 11	11 11	102	80				
	9 W.Z.C. 90	6.7	16 44	13 36	137	112				
	11 $\theta$ Libræ	4.4	11 8	7 53	59	95	11 51	8 36	330	3
	12 29 Ophiuchi	6.4	16 25	13 5	91	96	17 42	14 22	280	273
	13 W.Z.C. 1154	7.3					14 7	10 43	285	316
	13 B.D.—19° 4800	7.0					19 30	16 6	299	284
	14 B.D.—19° 5079	7.0					14 50	11 22	275	307
	15 B.D.—17° 5746	7.0					18 0	14 28	253	269
	17 W.Z.C. 1431	6.8					19 0	15 20	294	317
	17 72 B. Aquarii	6.5	18 37	14 57	13	38	19 15	15 35	314	335
	19 263 B. Aquarii	6.1	19 5	15 17	31	64	20 1	16 13	290	318
June	30 30 B. Cancri	6.1	13 33	9 3	62	22	14 14	9 44	325	286
	31 209 B. Cancri	6.5	14 54	10 19	26	347	15 3	10 28	8	329
	1 $\pi$ Leonis	4.9	12 6	7 28	108	82	13 13	8 35	295	261
	10 B.A.C. 6292	7.0					18 49	13 35	317	313
	11 $\rho$ Sagittarii	4.0	15 37	10 19	43	74	16 28	11 10	311	337
	14 96 B. Aquarii	6.5					17 48	12 18	253	286
July	29 35 Sextantis	6.1	14 52	8 24	138	102	15 44	9 15	261	223
	4 $\alpha$ Libræ	6.2	17 24	10 35	99	79	18 35	11 46	285	257
	14 W.Z.C. 1601	7.1					22 21	14 52	306	324
	18 147 B. Arietis	5.8	21 7	13 23	3	42	21 28	13 43	321	1
	20 318 B. Tauri	5.7	23 5	15 12	64	104	0 1	16 9	276	317
Aug.	3 W.Z.C. 1154	7.3	18 30	9 43	70	63				
	4 B.D.—18° 5079	7.0	20 0	11 9	49	37				
	6 31 B. Capricorni	6.4	17 24	8 25	124	151	18 19	9 20	216	236



# OCCULTATIONS, 1922.

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## OCCULTATIONS VISIBLE AT GREENWICH.

\*\* The Angles are reckoned from the North Point and Vertex of the Moon's limb towards the East.

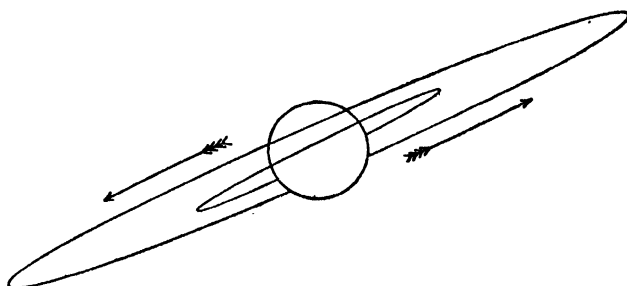
Date.	Star's Name.	Mag.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Vertex.			N. Point.	Vertex.
			h m	h m	°		h m	h m	°	°
Aug. 6	W.Z.C. 1370	6.8	23 0	14 0	111	88				
6	τ Capricorni	5.2	0 9	15 9	101	70	1 7	16 8	224	189
7	53 B. Aquarii	6.5	16 15	7 13	128	165	16 59	7 57	211	245
9	B.D.—6° 6087	7.0					19 23	10 13	292	323
16	θ <sup>1</sup> Tauri	4.2	21 8	11 30	120	156	21 48	12 10	217	255
16	75 Tauri	5.2	21 20	11 42	18	55	21 45	12 7	320	358
16	W.Z.C. 299	6.6					22 10	12 32	260	299
16	264 B. Tauri	4.8	21 55	12 17	85	124	22 52	13 14	252	292
16	W.Z.C. 305	6.7					22 55	13 17	239	279
16	275 B. Tauri	6.5	23 20	13 41	89	129	0 22	14 43	247	286
16	α Tauri (Aldeb.)	1.1	0 29	14 50	73	112	1 38	15 59	262	296
17	111 Tauri	5.1	21 54	12 11	57	93	22 41	12 59	289	327
17	117 Tauri	6.0	23 21	13 38	113	153	0 11	14 28	231	272
18	W.Z.C. 443	6.8					23 25	13 38	314	351
26	575 B. Virginis	6.2	16 38	6 21	156	130	17 22	7 5	239	207
29	W.Z.C. 1069	6.7	17 35	7 6	132	122				
31	95 B. Sagittarii	5.7	18 47	8 10	41	38	19 43	9 6	310	297
31	B.A.C. 6292	7.0	19 15	8 38	90	82				
Sept. 1	ρ Sagittarii	4.0	17 42	7 2	56	71	18 54	8 13	291	295
4	W.Z.C. 1460	6.8	19 20	8 28	64	86				
4	96 B. Aquarii	6.5	20 18	9 25	6	21	20 53	10 0	316	326
5	67 Aquarii	6.4	21 50	10 53	89	98	23 6	12 9	224	219
8	77 Piscium	6.4	2 38	15 29	47	28	3 51	16 41	269	240
10	25 Arietis	6.5					20 7	8 51	223	262
12	179 B. Tauri	5.9					21 12	9 47	211	248
15	41 H <sup>1</sup> Geminorum	6.0	2 23	14 46	147	187	2 58	15 21	213	252
18	83 B. Leonis	5.9					3 16	15 27	301	339
23	2 Libræ	6.3	19 0	6 53	64	28				
Oct. 3	316 B. Aquarii	6.5	2 32	13 44	114	84	3 20	14 32	202	168
7	W.Z.C. 138	7.3					3 40	14 36	214	196
7	ξ Arietis	5.5	3 13	14 9	43	31	4 24	15 20	279	254
7	W.Z.C. 141	6.7					5 35	16 31	238	204
8	W.Z.C. 187	6.6					2 54	13 46	232	235
10	318 B. Tauri	5.7	4 21	15 5	57	66	5 35	16 19	289	278
11	130 Tauri	5.6	2 24	13 5	49	87	3 25	14 5	298	329
13	68 Geminorum	5.2	1 5	11 38	171	210	1 15	11 48	193	232
15	o Leonis	3.8	8 7	18 31	114	134	9 19	19 43	283	287
25	B.D.—18° 5079	7.0	20 58	6 45	69	48				
27	W.Z.C. 1370	6.8	22 56	8 35	108	86				
27	τ Capricorni	5.2	0 6	9 44	98	68	1 6	10 44	227	192
Nov. 4	147 B. Arietis	5.8	9 2	18 7	13	334	9 24	18 29	328	289
6	θ <sup>1</sup> Tauri	4.2	21 39	6 39	134	172	22 11	7 10	204	243
6	75 Tauri	5.2	21 42	6 41	32	70	22 19	7 18	306	346
6	W.Z.C. 299	6.6					22 39	7 38	250	290

## OCCULTATIONS VISIBLE AT GREENWICH.

\*\*\* The Angles are reckoned from the North Point and Vertex of the Moon's limb towards the East.

Date.	Star's Name.	Mag.	Disappearance.				Reappearance.			
			Sidereal Time.	Mean Time.	Angle from		Sidereal Time.	Mean Time.	Angle from	
					N. Point.	Vertex.			N. Point.	Vertex.
			h m	h m	°	°	h m	h m	°	°
Nov. 6	264 B. Tauri	4.8	22 25	7 24	95	135	23 22	8 21	240	280
6	W.Z.C. 305	6.7					23 24	8 23	226	266
6	275 B. Tauri	6.5	23 56	8 55	101	141	0 57	9 56	233	270
6	$\alpha$ Tauri (Aldeb.)	1.1	1 9	10 8	85	122	2 21	11 20	250	279
7	111 Tauri	5.1	23 1	7 56	83	122	23 59	8 54	261	302
8	287 B. Orionis	6.2	23 38	8 29	148	186	0 5	8 56	206	245
8	292 B. Orionis	6.5	0 37	9 28	43	83	1 21	10 12	310	351
8	W.Z.C. 443	6.8					2 9	11 0	259	299
8	W.Z.C. 457	7.2					7 28	16 18	313	297
8	W.Z.C. 456	7.8					7 29	16 19	311	295
9	$\lambda$ Geminorum	3.6	1 32	10 19	132	172	2 17	11 4	230	271
10	29 Cancri	5.9	9 49	18 30	92	72	10 58	19 40	234	202
11	222 B. Cancri	6.3	6 26	15 4	128	160	7 32	16 10	262	284
22	45 Sagittarii	6.0	23 2	6 58	144	113	23 29	7 25	192	158
22	$\rho$ Sagittarii	4.0	23 5	7 1	20	348	23 39	7 35	319	285
26	67 Aquarii	6.4	23 34	7 14	43	33	0 47	8 27	268	247
27	W.Z.C. 1574	7.0	2 15	9 51	78	51				
28	B.D.—0° 37	7.0	2 15	9 47	103	81				
29	77 Piscium	6.4	4 21	11 49	18	346	5 6	12 34	301	265
30	W.Z.C. 111	7.3	1 29	8 53	120	123				
Dec. 1	25 Arietis	6.5	20 4	3 25	98	136	20 57	4 18	226	265
3	Lalande 7967	6.9	1 26	8 38	22	56				
3	75 Tauri	5.2	8 9	15 20	105	67	9 12	16 23	247	207
3	275 B. Tauri	6.5	10 48	17 59	131	92	11 28	18 39	223	186
3	$\alpha$ Tauri (Aldeb.)	1.1	11 41	18 52	89	53				
4	111 Tauri	5.1	9 36	16 43	149	109	10 11	17 18	213	172
5	Lalande 11713	6.6					5 23	12 27	329	341
5	124 H <sup>1</sup> Orionis	5.7	6 27	13 31	89	84	7 45	14 49	277	253
5	292 B. Orionis	6.5	10 21	17 24	90	51	11 23	18 26	283	242
5	W.Z.C. 443	6.8					12 0	19 4	249	209
6	W.B. VII. 66	6.6					8 30	15 29	247	227
7	1 Cancri	6.0	1 42	8 39	76	115	2 37	9 34	292	332
8	W.Z.C. 617	6.8					6 4	12 56	316	348
12	W.Z.C. 821	7.8					9 55	16 30	265	292
13	$m$ Virginis	5.2	10 49	17 20	133	160	11 52	18 24	272	290
14	6 B. Libræ	6.2	10 13	16 41	96	131	11 14	17 42	304	333
25	80 B. Piscium	6.3	5 30	11 15	66	28				
26	155 B. Piscium	6.5	6 19	12 0	50	12				
27	$\mu$ Piscium	5.0	1 41	7 19	96	93	2 53	8 31	216	199
28	W.Z.C. 138	7.3	6 39	12 12	65	27				
28	W.Z.C. 141	6.7	8 18	13 52	28	349				
28	25 Arietis	6.5	8 28	14 1	129	90	9 5	14 38	207	169
29	W.Z.C. 187	6.6	5 48	11 17	86	55				
31	318 B. Tauri	5.7	7 8	12 29	86	56	8 21	13 42	267	229

South



North

APPARENT ORBITS OF THE SATELLITES OF MARS AT DATE OF OPPOSITION, JUNE 10, 1922, AS SEEN IN AN INVERTING TELESCOPE.

Date.	PHOBOS.		Date.	DEIMOS.	
	Position Angle of Apsis.	Apparent Distance at Apsis.		Position Angle of Apsis.	Apparent Distance at Apsis.
May 21	119° 4'	24".9	May 21	116° 7'	62".3
June 10	121° 7'	28".1	June 10	119° 0'	70".2
June 30	124° 0'	27".7	June 30	121° 4'	69".3

GREENWICH MEAN TIME OF GREATEST ELONGATION.

PHOBOS.			DEIMOS.		
d	h		d	h	
May 4	22.7	E.	Apr. 30	15.1	E.
6	1.5	W.	May 2	12.5	W.
7	4.3	E.	4	10.0	E.
8	7.0	W.	6	7.4	W.
9	9.8	E.	8	4.9	E.
10	12.6	W.	10	2.3	W.
11	15.4	E.	11	23.8	E.
12	18.2	W.	13	21.2	W.
13	21.0	E.	15	18.6	E.
14	23.8	W.	17	16.1	W.
16	2.6	E.	19	13.5	E.
17	5.3	W.	21	10.9	W.
18	8.1	E.	23	8.4	E.
19	10.9	W.	25	5.8	W.
20	13.7	E.	27	3.2	E.
21	16.5	W.	29	0.6	W.
22	19.3	E.	30	22.0	E.
23	22.1	W.	June 1	19.4	W.
25	0.8	E.	3	16.8	E.
26	3.6	W.	5	14.3	W.
27	6.4	E.	7	11.7	E.
28	9.2	W.	9	9.1	W.
May 29	12.0	E.	June 11	6.5	E.
30	14.8	W.	13	3.9	W.
31	17.5	E.	15	1.3	E.
June 1	20.3	W.	16	22.7	W.
2	23.1	E.	18	20.1	E.
4	1.9	W.	20	17.5	W.
5	4.7	E.	22	14.9	E.
6	7.5	W.	24	12.3	W.
7	10.2	E.	26	9.7	E.
8	13.0	W.	28	7.1	W.
9	15.8	E.	July 30	4.6	E.
10	18.6	W.	2	2.0	W.
11	21.4	E.	3	23.4	E.
13	0.1	W.	5	20.8	W.
14	2.9	E.	7	18.2	E.
15	5.7	W.	9	15.7	W.
16	8.5	E.	11	13.1	E.
17	11.3	W.	13	10.6	W.
18	14.0	E.	15	8.0	E.
19	16.8	W.	17	5.5	W.
20	19.6	E.	19	2.9	E.
21	22.4	W.	21	0.4	W.
June 23	1.2	E.	June 23	1.2	E.
24	4.0	W.	24	4.0	W.
25	6.8	E.	25	6.8	E.
26	9.5	W.	26	9.5	W.
27	12.3	E.	27	12.3	E.
28	15.1	W.	28	15.1	W.
29	17.9	E.	29	17.9	E.
30	20.7	W.	30	20.7	W.
July 1	23.4	E.	July 1	23.4	E.
3	2.2	W.	3	2.2	W.
4	5.0	E.	4	5.0	E.
5	7.8	W.	5	7.8	W.
6	10.6	E.	6	10.6	E.
7	13.4	W.	7	13.4	W.
8	16.2	E.	8	16.2	E.
9	19.0	W.	9	19.0	W.
10	21.7	E.	10	21.7	E.
12	0.5	W.	12	0.5	W.
13	3.3	E.	13	3.3	E.
14	6.1	W.	14	6.1	W.
15	8.9	E.	15	8.9	E.
16	11.7	W.	16	11.7	W.

For Phobos every seventh eastern and western elongation is given, and for Deimos every third; the intermediate ones may be found by adding multiples of the period of the satellite.

Sidereal period of Phobos, 7<sup>h</sup> 39<sup>m</sup> 13<sup>s</sup>.85.

Sidereal period of Deimos, 30<sup>h</sup> 17<sup>m</sup> 54<sup>s</sup>.87.

518    SATELLITES OF JUPITER, 1922.

MEAN SYNODIC PERIODS OF THE SATELLITES.

V.  $0^d 11^h 57^m 27^s.6 = 0^d.498236$

	d	h	m	s		d			d	h	m	s		d	
I.	1	18	28	35.94619	=	1.7698604883			III.	7	3	59	35.85660	=	7.1663872292
II.	3	13	17	53.73665	=	3.5540941742			IV.	16	18	5	6.91878	=	16.7535523007

MEAN TIME OF EVERY TWENTIETH GREATEST ELONGATION.

SATELLITE V.

Jan.	d	h			Apr.	d	h			Jan.	d	h			Apr.	d	h		
	11	22.9	E.			11	14.8	E.			11	17.0	W.			11	8.8	W.	
	21	22.1	E.			21	13.9	E.			21	16.1	W.			21	7.9	W.	
	31	21.2	E.		May	1	13.0	E.			31	15.2	W.			May	1	7.0	W.
Feb.	10	20.3	E.			11	12.1	E.		Feb.	10	14.3	W.			11	6.1	W.	
	20	19.4	E.			21	11.2	E.			20	13.4	W.			21	5.2	W.	
Mar.	2	18.4	E.			31	10.3	E.		Mar.	2	12.5	W.			31	4.4	W.	
	12	17.5	E.		June	10	9.5	E.			12	11.6	W.			June	10	3.5	W.
	22	16.6	E.			20	8.6	E.			22	10.6	W.			20	2.7	W.	
Apr.	1	15.7	E.			30	7.8	E.		Apr.	1	9.7	W.			30	1.8	W.	

MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

SATELLITE I. (Io).

Jan.	d	h	m		Feb.	d	h	m		Mar.	d	h	m		Apr.	d	h	m	
	0	17	22.3			8	15	33.1			19	13	14.1			27	10	45.8	
	2	11	50.8			10	10	0.1			21	7	40.1			29	5	12.1	
	4	6	19.2			12	4	27.1			23	2	6.0			30	23	38.4	
	6	0	47.5			13	22	53.9			24	20	31.9		May	2	18	4.8	
	7	19	15.7			15	17	20.7			26	14	57.8			4	12	31.3	
	9	13	43.9			17	11	47.5			28	9	23.7			6	6	57.9	
	11	8	12.0			19	6	14.1			30	3	49.6			8	1	24.5	
	13	2	40.1			21	0	40.7			31	22	15.5			9	19	51.1	
	14	21	8.1			22	19	7.3		Apr.	2	16	41.4			11	14	17.8	
	16	15	36.0			24	13	33.9			4	11	7.2			13	8	44.6	
	18	10	3.9			26	8	0.3			6	5	33.1			15	3	11.5	
	20	4	31.7			28	2	26.7			7	23	59.0			16	21	38.4	
	21	22	59.4		Mar.	1	20	53.0			9	18	24.9			18	16	5.3	
	23	17	27.1			3	15	19.4			11	12	50.9			20	10	32.4	
	25	11	54.7			5	9	45.6			13	7	16.8			22	4	59.5	
	27	6	22.3			7	4	11.8			15	1	42.8			23	23	26.7	
	29	0	49.7			8	22	37.9			16	20	8.9			25	17	54.0	
	30	19	17.1			10	17	4.0			18	14	34.9			27	12	21.3	
Feb.	1	13	44.4			12	11	30.1			20	9	1.0			29	6	48.7	
	3	8	11.7			14	5	56.2			22	3	27.1			31	1	16.2	
	5	2	38.9			16	0	22.2			23	21	53.3		June	1	19	43.7	
	6	21	6.0			17	18	48.2			25	16	19.5			3	14	11.4	

# SATELLITES OF JUPITER, 1922. 519

## MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

### SATELLITE I. (Io)—*continued.*

June	d	h	m	July	d	h	m	Aug.	d	h	m	Nov.	d	h	m
	5	8	39.1		16	1	34.2		25	18	56.4		22	8	11.6
	7	3	6.8		17	20	3.4		27	13	26.5		24	2	41.8
	8	21	34.6		19	14	32.7		29	7	56.6		25	21	11.8
	10	16	2.5		21	9	2.0		31	2	26.8		27	15	42.0
	12	10	30.5		23	3	31.3	Sept.	1	20	56.9		29	10	12.0
	14	4	58.6		24	22	0.7		3	15	27.1	Dec.	1	4	42.1
	15	23	26.7		26	16	30.2		5	9	57.3		2	23	12.0
	17	17	54.9		28	10	59.6		7	4	27.5		4	17	42.1
	19	12	23.1		30	5	29.2		8	22	57.7		6	12	12.0
	21	6	51.4		31	23	58.7		10	17	27.9		8	6	42.0
	23	1	19.8	Aug.	2	18	28.3		12	11	58.2		10	1	11.8
	24	19	48.2		4	12	57.9		14	6	28.5		11	19	41.7
	26	14	16.7		6	7	27.7		16	0	58.7		13	14	11.5
	28	8	45.3		8	1	57.4		17	19	29.1		15	8	41.4
	30	3	13.9		9	20	27.2		19	13	59.4		17	3	11.1
July	1	21	42.6		11	14	56.9		21	8	29.8		18	21	40.8
	3	16	11.4		13	9	26.8		23	3	0.0		20	16	10.5
	5	10	40.2		15	3	56.6		24	21	30.4		22	10	40.2
	7	5	9.0		16	22	26.5		26	16	0.8		24	5	9.8
	8	23	38.0		18	16	56.4						25	23	39.4
	10	18	7.0		20	11	26.4	Nov.	17	0	41.1		27	18	8.9
	12	12	36.0		22	5	56.4		18	19	11.2		29	12	38.4
	14	7	5.1		24	0	26.4		20	13	41.5		31	7	7.8

### SATELLITE II. (EUROPA).

Jan.	d	h	m	Feb.	d	h	m	Apr.	d	h	m	June	d	h	m
	2	7	25.4		24	14	5.6		18	19	12.8		11	1	4.2
	5	20	44.1		28	3	15.5		22	8	21.6		14	14	19.4
	9	10	1.5	Mar.	3	16	25.9		25	21	30.0		18	3	35.4
	12	23	19.3		7	5	35.0		29	10	39.4		21	16	51.7
	16	12	35.7		10	18	44.5	May	2	23	48.4		25	6	8.7
	20	1	52.5		14	7	52.8		6	12	58.7		28	19	25.9
	23	15	7.8		17	21	1.7		10	2	8.6	July	2	8	43.8
	27	4	23.5		21	10	9.5		13	15	19.8		5	22	1.9
	30	17	37.8		24	23	18.0		17	4	30.7		9	11	20.6
Feb.	3	6	52.4		28	12	25.4		20	17	42.7		13	0	39.5
	6	20	5.5	Apr.	1	1	33.6		24	6	54.7		16	13	58.9
	10	9	19.0		4	14	40.9		27	20	7.8		20	3	18.6
	13	22	31.0		8	3	49.1		31	9	20.8		23	16	38.7
	17	11	43.3		11	16	56.6	June	3	22	34.9		27	5	59.0
	21	0	54.3		15	6	5.0		7	11	49.1		30	19	19.7

# 520 SATELLITES OF JUPITER, 1922.

## MEAN TIME OF SUPERIOR GEOCENTRIC CONJUNCTION.

### SATELLITE II. (EUROPA)—*continued.*

	d	h	m		d	h	m		d	h	m		d	h	m
Aug.	3	8	40.7	Aug.	31	19	36.9	Nov.	18	2	15.1	Dec.	16	13	18.9
	6	22	1.9	Sept.	4	8	59.7		21	15	38.5		20	2	41.1
	10	11	23.4		7	22	22.7		25	5	1.8		23	16	3.1
	14	0	45.2		11	11	45.8		28	18	25.0		27	5	24.9
	17	14	7.1		15	1	9.1	Dec.	2	7	48.1		30	18	46.4
	21	3	29.3		18	14	32.4		5	21	11.0				
	24	16	51.6		22	3	55.8		9	10	33.8				
	28	6	14.1		25	17	19.4		12	23	56.5				

### SATELLITE III. (GANYMEDE).

	d	h	m		d	h	m		d	h	m		d	h	m
Jan.	0	4	4.3	Mar.	26	23	21.2	June	20	17	11.3	Sept.	14	19	34.1
	7	8	3.6	Apr.	3	2	37.5		27	21	5.8		21	23	59.0
	14	11	58.7		10	5	53.8	July	5	1	5.1				
	21	15	49.9		17	9	10.6		12	5	7.6	Nov.	18	11	36.6
	28	19	36.5		24	12	29.0		19	9	13.7		25	16	2.0
Feb.	4	23	19.3	May	1	15	50.3		26	13	22.5	Dec.	2	20	26.8
	12	2	57.0		8	19	15.0	Aug.	2	17	34.1		10	0	49.6
	19	6	30.1		15	22	44.1		9	21	48.8		17	5	10.6
	26	9	58.6		23	2	17.0		17	2	5.8		24	9	29.1
Mar.	5	13	23.0		30	5	54.3		24	6	25.9		31	13	45.4
	12	16	44.6	June	6	9	35.5		31	10	47.2				
	19	20	3.4		13	13	21.1	Sept.	7	15	10.2				

### SATELLITE IV. (CALLISTO).

	d	h	m		d	h	m		d	h	m		d	h	m
Jan.	7	11	10.6	Mar.	31	17	54.0	June	22	23	5.0	Sept.	14	23	4.8
	24	4	41.5	Apr.	17	8	5.5	July	9	17	1.2				
Feb.	9	21	14.4	May	3	22	38.5		26	11	43.1	Nov.	21	9	15.6
	26	12	50.3		20	13	52.9	Aug.	12	7	3.2	Dec.	8	5	33.9
Mar.	15	3	37.5	June	6	6	1.1		29	2	52.8		25	1	31.7

# SATELLITES OF JUPITER, 1922. 521

## JANUARY.

### MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
0	III. E. f.	0 26.4	7	II. Sh. f.	*14 32	15	I. Tr. c.	*17 13	23	II. Em.	*16 24
	III. Im.	2 57		II. Tr. f.	*16 53		I. Sh. f.	*18 12		I. Em.	*18 32
	III. Em.	5 12		I. E. c.	*16 56.2		I. Tr. f.	19 24			
	II. Sh. c.	9 22		I. Em.	20 21						
	II. Tr. c.	11 48				16	II. E. c.	8 46.7	24	I. Sh. c.	*12 22
	II. Sh. f.	12 0		I. Sh. c.	*14 7		I. E. c.	*13 17.2		I. Tr. c.	*13 33
	II. Tr. f.	*14 20		I. Tr. c.	*15 21		II. Em.	*13 52		I. Sh. f.	*14 34
	I. E. c.	*15 3.3		I. Sh. f.	*16 19		I. Em.	*16 42		I. Tr. f.	*15 44
	I. Em.	*18 28		I. Tr. f.	*17 31					III. Sh. c.	23 42
1	I. Sh. c.	12 13	9	II. E. c.	6 11.2	17	I. Sh. c.	10 28	25	III. Sh. f.	2 12
	I. Tr. c.	13 27		II. Em.	11 19		I. Tr. c.	11 41		I. Tr. c.	*13 33
	I. Sh. f.	*14 26		I. E. c.	11 24.4		I. Sh. f.	12 41		II. Sh. c.	6 18
	I. Tr. f.	*15 38		I. Em.	*14 50		I. Tr. f.	*13 52		III. Tr. f.	6 42
2	II. E. c.	3 35.9	10	I. Sh. c.	8 35		III. Sh. c.	19 44		II. Sh. f.	8 40
	II. Em.	8 43		I. Tr. c.	9 49	18	III. Sh. f.	22 15		II. Sh. f.	8 54
	I. E. c.	9 31.5		I. Sh. f.	10 47		III. Tr. c.	0 50		I. E. c.	9 38.3
	I. Em.	12 57		I. Tr. f.	12 0		III. Tr. f.	2 54		II. Tr. f.	11 9
3	I. Sh. c.	6 42		III. Sh. c.	*15 46		II. Sh. c.	3 45	26	I. Sh. c.	6 50
	I. Tr. c.	7 55		III. Sh. f.	*18 19		II. Tr. c.	6 10		I. Tr. c.	8 1
	I. Sh. f.	8 54		III. Tr. c.	20 55		II. Sh. f.	6 21		I. Sh. f.	9 2
	I. Tr. f.	10 6		III. Tr. f.	23 3		I. E. c.	7 45.4		I. Tr. f.	10 11
	III. Sh. c.	11 48	11	II. Sh. c.	1 12		II. Tr. f.	8 40			
	III. Sh. f.	*14 22		II. Tr. c.	3 39	19	I. Em.	11 9	27	II. E. c.	0 40.5
	III. Tr. c.	*16 54		II. Sh. f.	3 49		I. Sh. c.	4 57		I. E. c.	4 6.5
	III. Tr. f.	*19 6		I. E. c.	5 52.6		I. Tr. c.	6 9		II. Em.	5 40
	II. Sh. c.	22 39		II. Tr. f.	6 9		I. Sh. f.	7 9		I. Em.	7 28
				I. Em.	9 18		I. Tr. f.	8 20	28		
4	II. Tr. c.	1 6	12	I. Sh. c.	3 3	20	II. E. c.	22 48		I. Sh. c.	1 18
	II. Sh. f.	1 16		I. Tr. c.	4 17		I. E. c.	2 13.7		I. Tr. c.	2 29
	II. Tr. f.	3 37		I. Sh. f.	5 16		II. Em.	3 9		I. Sh. f.	3 31
	I. E. c.	3 59.7		I. Tr. f.	6 28		I. Em.	5 37		I. Tr. f.	4 39
	I. Em.	7 25		II. E. c.	19 29.3		I. Sh. c.	23 25		III. E. c.	*13 39.3
5	I. Sh. c.	1 10	13	I. E. c.	0 20.8	21				III. E. f.	*16 11.0
	I. Tr. c.	2 24		II. Em.	0 36		I. Tr. c.	0 37	27	III. Im.	*18 36
	I. Sh. f.	3 22		I. Em.	3 46		I. Sh. f.	1 37		II. Sh. c.	19 34
	I. Tr. f.	4 35		I. Sh. c.	21 32		I. Tr. f.	2 48		III. Em.	20 37
	II. E. c.	*16 53.9		I. Tr. c.	22 45		III. E. c.	9 41.9		II. Tr. c.	21 53
	II. Em.	22 1		I. Sh. f.	23 44		III. E. f.	12 14.7		II. Sh. f.	22 10
	I. E. c.	22 27.9					III. Im.	*14 48		I. E. c.	22 34.7
6	I. Em.	1 53	14	I. Tr. f.	0 56		III. Em.	*16 52	29	II. Tr. f.	0 22
	I. Sh. c.	19 38		III. E. c.	5 44.5		II. Sh. c.	*17 1		I. Em.	1 55
	I. Tr. c.	20 52		III. E. f.	8 18.5		II. Tr. c.	19 25		I. Sh. c.	19 47
	I. Sh. f.	21 51		III. Im.	10 55		II. Sh. f.	19 38		I. Tr. c.	20 56
	I. Tr. f.	23 3		III. Em.	*13 3		I. E. c.	20 41.9		I. Sh. f.	21 59
7	III. E. c.	1 47.4		III. Sh. c.	*14 28	22	II. Tr. f.	21 55		I. Tr. f.	23 7
	III. E. f.	4 22.5		II. Tr. c.	*16 55				30	II. E. c.	*13 57.9
	III. Im.	6 58		II. Sh. f.	*17 5		I. Em.	0 5		I. E. c.	*17 2.9
	III. Em.	9 10		I. E. c.	*18 49.0		I. Sh. c.	*17 53		II. Em.	*18 54
	I. Sh. c.	11 55		II. Tr. f.	19 25		I. Tr. c.	*19 5		I. Em.	20 22
	II. Tr. c.	*14 23	15	I. Em.	22 14		I. Sh. f.	20 6	31	I. Sh. c.	*14 15
							I. Tr. f.	21 16		I. Tr. c.	*15 24
						23				I. Sh. f.	*16 28
							II. E. c.	11 22.2		-I. Tr. f.	*17 34
							I. E. c.	*15 10.1			

Eclipse commences - - - E. c.  
 „ finishes - - - E. f.

Transit commences - - - Tr. c.  
 „ finishes - - - Tr. f.

Occultation, immersion - - Im.  
 „ emersion - - Em.

Shadow commences - - Sh. c.  
 „ finishes - - - Sh. f.

# 522 SATELLITES OF JUPITER, 1922.

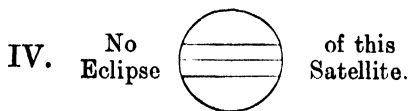
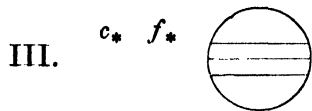
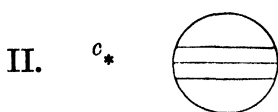
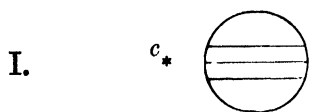
JANUARY.

MEAN TIME.

Configurations at 16<sup>h</sup> 0<sup>m</sup> for an inverting Telescope.

Day.	West.			East.		
0	• • 1	4'	2' ○	• 3		
1		4'	• 2 1. ○	• 3		
2		4'	○	• 1 • 2 3		
3		• 4	1' 3 ○	• 2		
4		• 4	3' 2' ○	• 1		
5		• 4	• 1 • 2 ○			
6		• 3	• 4 ○	1' • 2		
7	2' ○		• 1 ○	• 4 3		
8			• 2 ○	• 4 • 3		1 ○
9			○	• 1 • 2 3	• 4	
10			1' ○	3' 2'	• 4	
11			3' 2' ○	• 1	• 4	
12			3' 1' • 2 ○		• 4	
13			• 3 ○	1' • 2	• 4	
14			• 1 2 ○	• 3	• 4	
15			• 2 1 4 ○	• 3		
16			• 4' ○	• 2 3		• • 1
17		• 4'	1' ○	3' 2'		
18		• 4'	3' 2' ○	• 1		
19		• 4'	3' 1' • 2 ○			
20		• 4	• 3 ○	1' • 2		
21		• 4	• 1 ○	2' • 3		• • 3
22			• 4 2' ○	1' • 3		
23	• • 1		• 4 ○	3'		• • 2
24			1. ○	• 4 3' 2'		
25			3' 2' ○	• 1	• 4	
26			3' • 21' ○		• 4	
27			• 3 ○	• 1 • 2	• 4	
28	• • 3		• 1 ○	2' • 3	• 4	
29			2' ○	1' • 3	• 4	
30	• • 2		• 1 ○	3' 4		
31			○	3' 4' 1 ○		

Phases of the Eclipses of the Satellites for an inverting Telescope.





## FEBRUARY.

### MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	III. Sh. c.	3 39	8	III. Sh. c.	7 36	15	III. Sh. c.	*11 34	22	III. Sh. c.	*15 32
	III. Sh. f.	6 8		III. Sh. f.	10 5		II. Sh. c.	*13 56		II. Sh. c.	*16 29
	III. Tr. c.	8 27		II. Sh. c.	*11 24		III. Sh. f.	*14 2		I. E. c.	*17 10.0
	II. Sh. c.	8 51		III. Tr. c.	*12 8		I. E. c.	*15 17.0		III. Sh. f.	*17 59
	III. Tr. f.	10 25		I. E. c.	*13 24.1		III. Tr. c.	*15 45		II. Tr. c.	*18 14
	II. Tr. c.	11 6		II. Tr. c.	*13 31		II. Tr. c.	*15 54		II. Sh. f.	19 5
	II. Sh. f.	11 27		II. Sh. f.	*13 59		II. Sh. f.	*16 32		III. Tr. c.	19 18
	I. E. c.	11 31.2		III. Tr. f.	*14 4		III. Tr. f.	*17 39		I. Em.	20 12
	II. Tr. f.	*13 35		II. Tr. f.	*15 59		II. Tr. f.	*18 21		II. Tr. f.	20 42
	I. Em.	*14 50		I. Em.	*16 38		I. Em.	*18 26		III. Tr. f.	21 9
2	I. Sh. c.	8 43	9	I. Sh. c.	10 37	16	I. Sh. c.	*12 30	23	I. Sh. c.	*14 24
	I. Tr. c.	9 51		I. Tr. c.	*11 40		I. Tr. c.	*13 28		I. Tr. c.	*15 16
	I. Sh. f.	10 56		I. Sh. f.	*12 49		I. Sh. f.	*14 43		I. Sh. f.	*16 36
	I. Tr. f.	*12 2		I. Tr. f.	*13 51		I. Tr. f.	*15 39		I. Tr. f.	*17 26
3	II. E. c.	3 16.3	10	II. E. c.	5 52.2	17	II. E. c.	8 28.2	24	II. E. c.	*11 4.3
	I. E. c.	5 59.4		I. E. c.	7 52.3		I. E. c.	9 45.3		I. E. c.	*11 38.3
	II. Em.	8 8		II. Em.	10 34		I. Em.	*12 53		I. Em.	*14 39
	I. Em.	9 17		I. Em.	11 5		II. Em.	*12 58		II. Em.	*15 21
4	I. Sh. c.	3 12	11	I. Sh. c.	5 5	18	I. Sh. c.	6 59	25	I. Sh. c.	8 52
	I. Tr. c.	4 19		I. Tr. c.	6 8		I. Tr. c.	7 55		I. Tr. c.	9 42
	I. Sh. f.	5 24		I. Sh. f.	7 18		I. Sh. f.	9 11		I. Sh. f.	*11 5
	I. Tr. f.	6 29		I. Tr. f.	8 18		I. Tr. f.	10 6		I. Tr. f.	*11 53
	III. E. c.	*17 37.5		III. E. c.	21 35.2	19	III. E. c.	1 33.1	26	III. E. c.	5 30.5
	III. E. f.	20 8.1		III. E. f.	0 4.8		II. Sh. c.	3 13		II. Sh. c.	5 46
	II. Sh. c.	22 7		II. Sh. c.	0 40		III. E. f.	4 1.6		I. E. c.	6 6.6
	III. Im.	22 20		III. Im.	1 59		I. E. c.	4 13.5		II. Tr. c.	7 23
5	III. Em.	0 18		I. E. c.	2 20.5		II. Tr. c.	5 4		III. E. f.	7 57.9
	II. Tr. c.	0 19		II. Tr. c.	2 43		III. Im.	5 33		II. Sh. f.	8 21
	I. E. c.	0 27.6		II. Sh. f.	3 16		II. Sh. f.	5 48		III. Im.	9 2
	II. Sh. f.	0 43		III. Em.	3 55		I. Em.	7 19		I. Em.	9 5
	II. Tr. f.	2 47		II. Tr. f.	5 11		III. Em.	7 27		II. Tr. f.	9 51
	I. Em.	3 44		I. Em.	5 32		II. Tr. f.	7 32		III. Em.	*10 55
	I. Sh. c.	21 40		I. Sh. c.	23 34	20	I. Sh. c.	1 27	27	I. Sh. c.	3 21
	I. Tr. c.	22 46		I. Tr. c.	0 35		I. Tr. c.	2 22		I. Tr. c.	4 9
	I. Sh. f.	23 53		I. Sh. f.	1 46		I. Sh. f.	3 40		I. Sh. f.	5 33
6	I. Tr. f.	0 56	13	I. Tr. f.	2 45		I. Tr. f.	4 33		I. Tr. f.	6 19
	II. E. c.	*16 33.8		II. E. c.	19 9.7		II. E. c.	21 45.8			
	I. E. c.	*18 55.8		I. E. c.	20 48.7		I. E. c.	22 41.8			
	II. Em.	21 21		II. Em.	23 46	21	I. Em.	1 46	28	II. E. c.	0 22.0
	I. Em.	22 11		I. Em.	23 59		II. Em.	2 10		I. E. c.	0 34.8
7	I. Sh. c.	*16 9	14	I. Sh. c.	*18 2		I. Sh. c.	19 56		I. Em.	3 32
	I. Tr. c.	*17 13		I. Tr. c.	19 2		I. Tr. c.	20 49		II. Em.	4 31
	I. Sh. f.	*18 21		I. Sh. f.	20 15		I. Sh. f.	22 8		I. Sh. c.	21 49
	I. Tr. f.	19 24		I. Tr. f.	21 12		I. Tr. f.	22 59		I. Tr. c.	22 35

Eclipse commences - - - E. c.  
 „ finishes - - - E. f.

Occultation, immersion - - Im.  
 „ emersion Em.

Transit commences - - - Tr. c.  
 „ finishes - - - Tr. f.

Shadow commences - - - Sh. c.  
 „ finishes - - - Sh. f.

# 524    SATELLITES OF JUPITER, 1922.

FEBRUARY.

MEAN TIME.

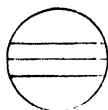
Configurations at 14<sup>h</sup> 45<sup>m</sup> for an inverting Telescope.

Day.	West.	East.
1		3. <sup>2</sup> <sub>4</sub> ○ ● . 1
2		3. 4. 2. 1. ○
3	4. 3.	○ 1. <sup>2</sup> <sub>1</sub>
4	4. 1. 3.	○ 2.
5	4. 2.	○ 1. 3.
6	4. 1. <sup>2</sup> <sub>1</sub>	○ 3.
7	4. 1.	○ 1. <sup>2</sup> <sub>3</sub>
8	● 1 2. ○ 4.	○ 3.
9	3. 2. 1. <sup>4</sup> <sub>1</sub>	○
10	3.	○ 1. <sup>2</sup> <sub>1</sub> 4.
11	1. <sup>3</sup> <sub>1</sub>	○ 2. 4.
12	2.	○ 1. <sup>3</sup> <sub>1</sub> 4.
13	1. <sup>2</sup> <sub>1</sub>	○ 3. 4.
14		○ 1. 2 3. 4.
15		1. <sup>1</sup> <sub>2</sub> ○ 4.
16	1. ○ 3. 2.	○ 4.
17	3.	○ 1. <sup>2</sup> <sub>1</sub> 4.
18	3. 1. <sup>1</sup> <sub>4</sub>	○ 2.
19	4. 2.	○ 1. <sup>3</sup> <sub>1</sub>
20	4. 1. <sup>2</sup> <sub>1</sub>	○ 3.
21	4.	○ 1. 2 3.
22	4. 1.	○ 1. <sup>2</sup> <sub>3</sub>
23	4. 1. <sup>2</sup> <sub>3</sub>	○ 1.
24	4. 3.	○ 1. ● . 2
25	1. <sup>4</sup> <sub>3</sub> 1.	○ 2.
26	2.	○ 1. <sup>4</sup> <sub>3</sub> 1.
27	1. <sup>2</sup> <sub>1</sub>	○ 4 3.
28		○ 1. 2 3. 4.

Phases of the Eclipses of the Satellites for an inverting Telescope.

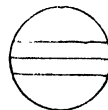
I.

c\*



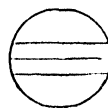
II.

c\*



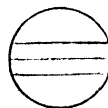
III.

c\* f\*



IV. No Eclipse

of this Satellite



# SATELLITES OF JUPITER, 1922. 525

MARCH.

## MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	I. Sh. f.	0 2	8	II. Sh. c.	21 35	16	II. Tr. f.	3 32	24	I. Sh. f.	0 12
	I. Tr. f.	0 46		II. Tr. c.	22 49		III. Tr. c.	5 30		I. Tr. f.	0 27
	II. Sh. c.	19 2		III. Sh. c.	23 29		III. Sh. f.	5 51		I. E. c.	19 11.4
	I. E. c.	19 3.1		I. Em.	23 43		III. Tr. f.	7 21		II. E. c.	21 29.8
	III. Sh. c.	19 31					I. Sh. c.	20 5		I. Em.	21 37
	II. Tr. c.	20 32	9	II. Sh. f.	0 10		I. Tr. c.	20 32	25	II. Em.	0 33
	II. Sh. f.	21 37		II. Tr. f.	1 17		I. Sh. f.	22 18		I. Sh. c.	*16 28
	III. Sh. f.	21 56		III. Sh. f.	1 54		I. Tr. f.	22 42		I. Tr. c.	*16 42
	I. Em.	21 58		III. Tr. c.	2 10					I. Sh. f.	18 40
	III. Tr. c.	22 46		III. Tr. f.	4 0	17	I. E. c.	*17 18.0		I. Tr. f.	18 53
	II. Tr. f.	23 0		I. Sh. c.	18 11		II. E. c.	18 53.3			
				I. Tr. c.	18 47		I. Em.	19 53			
2	III. Tr. f.	0 36		I. Sh. f.	20 24		II. Em.	22 17	26	I. E. c.	*13 39.8
	I. Sh. c.	*16 18		I. Tr. f.	20 58	18	I. Sh. c.	*14 34		II. Sh. c.	*15 59
	I. Tr. c.	*17 2					I. Tr. c.	*14 58		I. Em.	*16 3
	I. Sh. f.	18 30	10	I. E. c.	*15 24.6		I. Sh. f.	*16 46		II. Tr. c.	*16 25
	I. Tr. f.	19 12		II. E. c.	*16 16.9		I. Tr. f.	*17 9		II. Sh. f.	18 33
				I. Em.	18 9					I. Sh. f.	18 54
				II. Em.	20 0					III. E. c.	21 22.5
3	I. E. c.	*13 31.4				19	I. E. c.	*11 46.3	27	III. Em.	0 18
	II. E. c.	*13 40.6		I. Sh. c.	*12 40		II. Sh. c.	*13 25		I. Sh. c.	*10 56
	I. Em.	*16 24		I. Tr. c.	*13 13		II. Tr. c.	*14 11		I. Tr. c.	*11 8
	II. Em.	*17 41	11	I. Sh. f.	*14 53		I. Em.	*14 19		I. Sh. f.	*13 9
				I. Tr. f.	*15 24		II. Sh. f.	*16 0		I. Tr. f.	*13 19
4	I. Sh. c.	*10 46					II. Tr. f.	*16 39			
	I. Tr. c.	*11 28	12	I. E. c.	*9 53.0	20	III. E. c.	*17 23.7	28	I. E. c.	*8 8.2
	I. Sh. f.	*12 59		II. Sh. c.	*10 52					I. Em.	*10 29
	I. Tr. f.	*13 39		II. Tr. c.	*11 57		I. Sh. c.	*9 2		II. E. c.	*10 47.7
				I. Em.	*12 35		I. Tr. c.	*9 24		II. Em.	*13 41
5	I. E. c.	7 59.7		III. E. c.	*13 25.7		I. Sh. f.	*11 15	29	I. Sh. c.	5 25
	II. Sh. c.	8 19		II. Sh. f.	*13 27	21	I. Tr. f.	*11 35		I. Tr. c.	5 34
	III. E. c.	9 27.9		II. Tr. f.	*14 25					I. Sh. f.	7 38
	II. Tr. c.	*9 41		III. Em.	*17 40		I. E. c.	6 14.7		I. Tr. f.	*7 45
	I. Em.	*10 51	13				II. E. c.	8 11.1			
	II. Sh. f.	*10 54		I. Sh. c.	7 8	22	I. Em.	*8 45	30	I. E. c.	2 36.6
	III. E. f.	*11 54.2		I. Tr. c.	7 40		II. Em.	*11 25		I. Em.	4 55
	II. Tr. f.	*12 9		I. Sh. f.	*9 21					II. Sh. c.	5 15
	III. Im.	*12 27		I. Tr. f.	*9 50					II. Tr. c.	5 32
	III. Em.	*14 19	14							II. Sh. f.	*7 50
6	I. Sh. c.	5 14		I. E. c.	4 21.3	23	I. Sh. c.	3 31		II. Tr. f.	*8 0
	I. Tr. c.	5 55		II. E. c.	5 34.6		I. Tr. c.	3 50		III. Sh. c.	*11 23
	I. Sh. f.	7 27	15	I. Em.	7 1		I. Sh. f.	5 43		III. Tr. c.	*12 3
	I. Tr. f.	8 5		II. Em.	*9 8		I. Tr. f.	6 1		III. Sh. f.	*13 45
										III. Tr. f.	*13 57
7	I. E. c.	2 28.0		I. Sh. c.	1 37		I. E. c.	0 43.0	31	I. Tr. c.	0 0
	II. E. c.	2 58.2		I. Tr. c.	2 6		II. Sh. c.	2 42		I. Sh. f.	2 6
	I. Em.	5 17		I. Sh. f.	3 49		I. Em.	3 11		I. Tr. f.	2 11
	II. Em.	6 50		I. Tr. f.	4 16		II. Tr. c.	3 18		I. E. c.	21 5.0
	I. Sh. c.	23 43		I. E. c.	22 49.6		II. Sh. f.	5 16		I. Em.	23 21
							II. Tr. f.	5 47			
8	I. Tr. c.	0 21	16	II. Sh. c.	0 8		III. Sh. c.	7 25			
	I. Sh. f.	1 56		II. Tr. c.	1 4		III. Tr. c.	*8 47			
	I. Tr. f.	2 31		I. Em.	1 27		III. Sh. f.	*9 48			
	I. E. c.	20 56.3		II. Sh. f.	2 43		III. Tr. f.	*10 40			
				III. Sh. c.	3 27		I. Sh. c.	21 59			
							I. Tr. c.	22 16			

Eclipse commences - - - E. c.  
 „ finishes - - - E. f.

Transit commences - - - Tr. c.  
 „ finishes - - - Tr. f.

Occultation, immersion - - Im.  
 „ emersion - - Em.

Shadow commences - - - Sh. c.  
 „ finishes - - - Sh. f.

# 526 SATELLITES OF JUPITER, 1922.

MARCH.

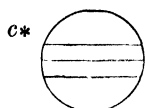
## MEAN TIME.

Configurations at 13<sup>h</sup> 15<sup>m</sup> for an inverting Telescope.

Day.	West.			East.		
1			1 <sup>1</sup> ○	2 <sup>2</sup> 3 <sup>3</sup>		4 <sup>4</sup>
2			2 <sup>2</sup> 3 <sup>3</sup> ○	1 <sup>1</sup>		4 <sup>4</sup>
3		3 <sup>3</sup>	○	2 <sup>2</sup> 1 <sup>1</sup>		4 <sup>4</sup>
4	1 <sup>1</sup> ○		3 <sup>3</sup> ○		2 <sup>2</sup>	4 <sup>4</sup>
5	1 <sup>1</sup> ● 3 <sup>3</sup>		2 <sup>2</sup> ○	1 <sup>1</sup>		4 <sup>4</sup>
6			2 <sup>2</sup> 1 <sup>1</sup> ○	4 <sup>4</sup>		3 <sup>3</sup>
7			4 <sup>4</sup> ○	2 <sup>2</sup> 1 <sup>1</sup>		3 <sup>3</sup>
8		4 <sup>4</sup>	1 <sup>1</sup> ○	2 <sup>2</sup> 3 <sup>3</sup>		
9		4 <sup>4</sup>	2 <sup>2</sup> 3 <sup>3</sup> ○	1 <sup>1</sup>		
10		4 <sup>4</sup>	3 <sup>3</sup> ○	2 <sup>2</sup> 1 <sup>1</sup>		
11		4 <sup>4</sup>	3 <sup>3</sup> ○		2 <sup>2</sup>	1 <sup>1</sup> ○
12		4 <sup>4</sup>	3 <sup>3</sup> 1 <sup>1</sup> ○			2 <sup>2</sup> ○
13		4 <sup>4</sup>	2 <sup>2</sup> 1 <sup>1</sup> ○		3 <sup>3</sup>	
14			4 <sup>4</sup> ○	2 <sup>2</sup> 1 <sup>1</sup>		3 <sup>3</sup>
15			1 <sup>1</sup> ○	4 <sup>4</sup> 2 <sup>2</sup> 3 <sup>3</sup>		
16			2 <sup>2</sup> 3 <sup>3</sup> ○	1 <sup>1</sup>		4 <sup>4</sup>
17		3 <sup>3</sup>	2 <sup>2</sup> 1 <sup>1</sup> ○			4 <sup>4</sup>
18		3 <sup>3</sup>	1 <sup>1</sup> ○	2 <sup>2</sup>		4 <sup>4</sup>
19	1 <sup>1</sup> ●		3 <sup>3</sup> 2 <sup>2</sup> ○			4 <sup>4</sup>
20			2 <sup>2</sup> 1 <sup>1</sup> ○	3 <sup>3</sup>		4 <sup>4</sup>
21			○	2 <sup>2</sup> 1 <sup>1</sup>		3 <sup>3</sup> 4 <sup>4</sup>
22			1 <sup>1</sup> ○	2 <sup>2</sup> 4 <sup>4</sup> 3 <sup>3</sup>		
23			2 <sup>2</sup> 3 <sup>3</sup> 4 <sup>4</sup> ○	1 <sup>1</sup>		
24		3 <sup>3</sup> 4 <sup>4</sup>	2 <sup>2</sup> 1 <sup>1</sup> ○			
25		4 <sup>4</sup>	3 <sup>3</sup> ○	1 <sup>1</sup>		2 <sup>2</sup>
26		4 <sup>4</sup>	3 <sup>3</sup> ○	1 <sup>1</sup> 2 <sup>2</sup>		
27	1 <sup>1</sup> ○	4 <sup>4</sup>	2 <sup>2</sup> ○		3 <sup>3</sup>	
28		4 <sup>4</sup>	○	1 <sup>1</sup>	3 <sup>3</sup>	2 <sup>2</sup> ●
29		4 <sup>4</sup>	1 <sup>1</sup> ○	2 <sup>2</sup> 3 <sup>3</sup>		
30	3 <sup>3</sup> ○		4 <sup>4</sup> 2 <sup>2</sup> ○	1 <sup>1</sup>		
31			3 <sup>3</sup> 2 <sup>2</sup> 1 <sup>1</sup> ○	4 <sup>4</sup>		

Phases of the Eclipses of the Satellites for an inverting Telescope.

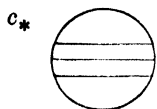
I.



II.



III.



IV.

No Eclipse



of this Satellite.

## SATELLITES OF JUPITER, 1922. 527

APRIL.

MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	II. E. c.	0 6.4	9	I. Im.	17 20	17	II. Sh. f.	2 14	24	I. Sh. f.	20 46
	II. Em.	2 49		I. E. f.	19 39.1		III. Im.	* 8 9			
	I. Sh. c.	18 22		II. Tr. c.	20 51		III. E. f.	*11 37.8			
	I. Tr. c.	18 26		II. Sh. c.	21 6		I. Tr. c.	16 20			
	I. Sh. f.	20 35		II. Tr. f.	23 21		I. Sh. c.	16 39			
	I. Tr. f.	20 37		II. Sh. f.	23 40		I. Tr. f.	18 32	25	I. Im.	*15 14
							I. Sh. f.	18 52		I. E. f.	17 55.5
2	I. E. c.	*15 33.4	10	III. Im.	4 54	18	I. Im.	*13 30		II. Im.	20 13
	I. Em.	17 47		III. E. f.	* 7 40.6		I. E. f.	16 1.4		II. E. f.	23 49.8
	II. Sh. c.	18 32		I. Tr. c.	*14 36		II. Im.	17 56			
	II. Tr. c.	18 38		I. Sh. c.	*14 45		II. E. f.	21 13.5			
	II. Sh. f.	21 7		I. Tr. f.	16 47						
	II. Tr. f.	21 7		I. Sh. f.	16 57						
3	III. E. c.	1 21.0	11	I. Im.	*11 46	19	I. Tr. c.	*10 47	26	I. Tr. c.	*12 32
	III. E. f.	3 43.0		I. E. f.	*14 7.5		I. Sh. c.	*11 8		I. Sh. c.	*13 3
	I. Sh. c.	*12 50		II. Im.	*15 41		I. Tr. f.	*12 58		I. Tr. f.	*14 43
	I. Tr. c.	*12 52		II. E. f.	18 37.2		I. Sh. f.	*13 20		I. Sh. f.	*15 15
	I. Tr. f.	*15 3									
	I. Sh. f.	*15 3									
4	I. E. c.	*10 1.8	12	I. Tr. c.	* 9 2	20	I. Im.	* 7 56	27	I. Im.	* 9 40
	I. E. f.	*12 13.8		I. Sh. c.	* 9 14		I. E. f.	*10 29.9		I. E. f.	*12 24.0
	II. E. c.	*13 24.3		I. Tr. f.	*11 13		II. Tr. c.	*12 12		II. Tr. c.	*14 28
	II. E. f.	*16 0.9		I. Sh. f.	*11 26		II. Sh. c.	*12 57		II. Sh. c.	15 32
							II. Tr. f.	*14 43		II. Tr. f.	16 59
							II. Sh. f.	*15 31		II. Sh. f.	18 5
5	I. Tr. c.	* 7 18	13	I. Im.	6 12		III. Tr. c.	21 51			
	I. Sh. c.	* 7 19		I. E. f.	* 8 36.0		III. Sh. c.	23 20			
	I. Tr. f.	* 9 29		II. Tr. c.	* 9 58		III. Tr. f.	23 54			
	I. Sh. f.	* 9 32		II. Sh. c.	*10 23	21	III. Sh. f.	1 39	28	III. Tr. c.	1 10
				II. Tr. f.	*12 28		I. Tr. c.	5 13		III. Tr. f.	3 16
				II. Sh. f.	*12 57		I. Sh. c.	5 37		III. Sh. c.	3 19
6	I. Im.	4 28		III. Tr. c.	18 34		I. Tr. f.	* 7 24		III. Sh. f.	5 36
	I. E. f.	6 42.2		III. Sh. c.	19 21		I. Sh. f.	* 7 49		I. Tr. c.	6 58
	II. Tr. c.	* 7 45		III. Tr. f.	20 34					I. Sh. c.	* 7 31
	II. Sh. c.	* 7 49		III. Sh. f.	21 41					I. Tr. f.	* 9 9
	II. Tr. f.	*10 14	14	I. Tr. c.	3 28	22	I. Im.	2 22		I. Sh. f.	* 9 43
	II. Sh. f.	*10 23		I. Sh. c.	3 42		I. E. f.	4 58.4			
	III. Tr. c.	*15 18		I. Tr. f.	5 39		II. Im.	7 5			
	III. Sh. c.	*15 22		I. Sh. f.	5 55		II. E. f.	*10 32.0			
	III. Tr. f.	17 15					I. Tr. c.	23 39			
	III. Sh. f.	17 43	15	I. Im.	0 38	23	I. Sh. c.	0 5	29	I. Im.	4 7
				I. E. f.	3 4.5		I. Tr. f.	1 50		I. E. f.	6 52.6
7	I. Tr. c.	1 44		II. Im.	4 49		I. Sh. f.	2 18		II. Im.	* 9 22

Eclipse commences	-	-	-	E. c.
„ finishes	-	-	-	E. f.

Transit commences - - -	Tr. c.
„ finishes - - -	Tr. f.

Occultation, immersion - . Im.  
 " emersion - . Em.

Shadow commences - . . .	Sh. c.
„ finishes - . . .	Sh. f.

528 SATELLITES OF JUPITER, 1922.

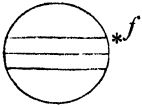
APRIL.

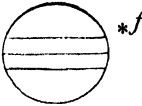
MEAN TIME.

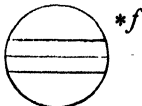
Configurations at 11<sup>h</sup> 45<sup>m</sup> for an inverting Telescope.

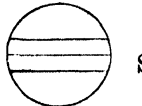
Day.	West.		East.	
1		3	1. 2. 4	
2		3 1	2	4
3		2	1 3	4
4			2 3 4	1
5		1	2 3	4
6		2	3 1	4
7		3 2 1		4
8		3	4 1	
9		3 4	2	
10		4 2	1 3	
11		4	2 1	3
12		4	1	2 3
13	2. 1	4	3 1	
14		4	3 1	
15		4 3	2 1	
16		3 4 1	2	
17		2	3 4	
18		2 1	3 4	
19			2 3 4	1
20		2 1 3		4
21		2 3 1		4
22		3	2 1	4
23		3 1	2	4
24	1 3	2	1 4	
25		2 1 4	3	
26		4	1 2 3	
27		4	2 3	1
28		4	2 3 1	
29		4 3	1	2
30		4 3 1	2	

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.

II.

III.

IV. No Eclipse of this Satellite.

# SATELLITES OF JUPITER, 1922. 529

MAY.

## MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	I. E. f.	1 21.1	8	III. Em.	20 21	16	I. Sh. f.	2 30	24	II. E. f.	10 14.9
	II. Tr. c.	3 36		III. E. c.	21 13.9		III. E. f.	3 29.4		I. Tr. c.	19 41
	II. Sh. c.	4 49		I. Tr. c.	21 37		I. Im.	20 33		I. Sh. c.	20 42
	II. Tr. f.	6 8		I. Sh. c.	22 23		I. E. f.	23 38.4		I. Tr. f.	21 52
	II. Sh. f.	* 7 22		III. E. f.	23 30.6					I. Sh. f.	22 53
	III. Im.	* 14 45		I. Tr. f.	23 49	17	II. Im.	3 13			
	III. Em.	16 55					II. E. f.	7 38.7	25	I. Im.	16 48
	III. E. c.	17 15.0	9	I. Sh. f.	0 35		I. Tr. c.	17 52		I. E. f.	20 1.6
	III. E. f.	19 32.7		I. Im.	18 45		I. Sh. c.	18 47		II. Tr. c.	23 48
	I. Tr. c.	19 51		I. E. f.	21 44.0		I. Tr. f.	20 4			
	I. Sh. c.	20 29					I. Sh. f.	20 58			
	I. Tr. f.	22 2	10	II. Im.	0 51	18	I. Im.	14 59	26	II. Sh. c.	1 52
	I. Sh. f.	22 41		II. E. f.	5 2.4		I. E. f.	18 7.0		II. Tr. f.	2 21
2	I. Im.	16 59		I. Tr. c.	16 4		II. Tr. c.	21 24		II. Sh. f.	4 24
	I. E. f.	19 49.7		I. Sh. c.	16 52		II. Sh. c.	23 17		I. Tr. c.	14 8
	II. Im.	22 31		I. Tr. f.	18 16		II. Tr. f.	23 58		III. Tr. c.	14 59
				I. Sh. f.	19 4					I. Sh. c.	15 11
3	II. E. f.	2 26.1	11	I. Im.	* 13 12	19	II. Sh. f.	1 49		I. Tr. f.	16 20
	I. Tr. c.	* 14 17		I. E. f.	16 12.6		III. Tr. c.	* 11 26		III. Tr. f.	17 19
	I. Sh. c.	* 14 57		II. Tr. c.	19 4		I. Tr. c.	* 12 19		I. Sh. f.	17 22
	I. Tr. f.	16 29		II. Sh. c.	20 41		I. Sh. c.	* 13 16		III. Sh. c.	19 15
	I. Sh. f.	17 9		II. Tr. f.	21 36		III. Tr. f.	* 13 42		III. Sh. f.	21 28
				II. Sh. f.	23 14		I. Tr. f.	14 31			
4	I. Im.	* 11 26	12	III. Tr. c.	* 7 56		III. Sh. c.	15 16	27	I. Im.	* 11 15
	I. E. f.	* 14 18.2		III. Tr. f.	* 10 10		I. Sh. f.	15 27		I. E. f.	14 30.3
	II. Tr. c.	16 45		I. Tr. c.	* 10 31		III. Sh. f.	17 30		II. Im.	18 50
	II. Sh. c.	18 7		III. Sh. c.	* 11 17	20	I. Im.	* 9 26		II. E. f.	23 33.1
	II. Tr. f.	19 17		I. Sh. c.	* 11 21		I. E. f.	* 12 35.7	28	I. Tr. c.	* 8 36
	II. Sh. f.	20 39		I. Tr. f.	* 12 43		II. Im.	16 25		I. Sh. c.	* 9 39
5	III. Tr. c.	4 31		III. Sh. f.	* 13 32		II. E. f.	20 57.0		I. Tr. f.	* 10 47
	III. Tr. f.	6 41		I. Sh. f.	* 13 32					I. Sh. f.	* 11 50
	III. Sh. c.	7 18	13	I. Im.	* 7 39	21	I. Tr. c.	6 46			
	I. Tr. c.	* 8 44		I. E. f.	* 10 41.2		I. Sh. c.	7 44	29	I. Im.	5 43
	I. Sh. c.	* 9 26		II. Im.	* 14 2		I. Tr. f.	* 8 58		I. E. f.	* 8 59.0
	III. Sh. f.	* 9 34		II. E. f.	18 20.8		I. Sh. f.	* 9 56		II. Tr. c.	* 13 0
	I. Tr. f.	* 10 55	14	I. Tr. c.	4 58	22	I. Im.	3 54		II. Sh. c.	15 10
	I. Sh. f.	* 11 38		I. Sh. c.	5 50		I. E. f.	7 4.4		II. Tr. f.	15 34
6	I. Im.	5 52		I. Tr. f.	7 9		II. Tr. c.	* 10 36		II. Sh. f.	17 41
	I. E. f.	* 8 46.8	15	I. Sh. f.	* 8 1		II. Sh. c.	* 12 34	30	I. Tr. c.	3 3
	II. Im.	* 11 41					II. Tr. f.	* 13 9		I. Sh. c.	4 8
	II. E. f.	15 44.6					II. Sh. f.	15 6		III. Im.	4 43
7	I. Tr. c.	3 11	15	I. Im.	2 6	23	III. Im.	1 7		I. Tr. f.	5 15
	I. Sh. c.	3 55		I. E. f.	5 9.8		I. Tr. c.	1 13		I. Sh. f.	6 19
	I. Tr. f.	5 22		II. Tr. c.	* 8 14		I. Sh. c.	2 13		III. Em.	7 5
	I. Sh. f.	6 6		II. Sh. c.	* 9 59		I. Tr. f.	3 25		III. E. c.	* 9 12.5
				II. Tr. f.	* 10 47		III. Em.	3 27		III. E. f.	* 11 26.1
				II. Sh. f.	* 12 31		I. Sh. f.	4 24			
8	I. Im.	0 19		III. Im.	21 36		III. E. c.	5 13.1	31	I. Im.	0 10
	I. E. f.	3 15.4		I. Tr. c.	23 25		III. E. f.	7 27.8		I. E. f.	3 27.7
	II. Tr. c.	5 54		III. Em.	23 52		I. Im.	22 21		II. Im.	* 8 3
	II. Sh. c.	7 24								II. E. f.	* 12 50.9
	II. Tr. f.	* 8 27	16	I. Sh. c.	0 18	24	I. E. f.	1 33.0		I. Tr. c.	21 31
	II. Sh. f.	* 9 57		III. E. c.	1 13.7		II. Im.	5 37		I. Sh. c.	22 37
	III. Im.	18 8		I. Tr. f.	1 36					I. Tr. f.	23 42

Eclipse commences - - - E. c.  
 „ finishes - - - E. f.

Transit commences - - - Tr. c.  
 „ finishes - - - Tr. f.

Occultation, immersion - - Im.  
 „ emersion - - Em.

Shadow commences - - Sh. c.  
 „ finishes - - - Sh. f.

530    SATELLITES OF JUPITER, 1922.

MAY.

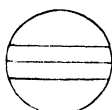
MEAN TIME.

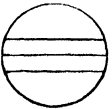
Configurations at 10<sup>h</sup> 45<sup>m</sup> for an inverting Telescope.


Day.	West.			East.		
1		4	2. 3	○	1.	
2		4	2. 1	○		3
3			4	○	1. 2	3.
4				○ 1	2. 4	3.
5	1. ○		2.	3.	○	4
6.		3.		○ 2	1.	4
7		3	1.	○	2.	4
8			3.	○	1.	4.
9			2. 1	○	3	4.
10				○	1. 2	3.
11				○ 1	2. 4.	3.
12			2.	3.	○	1 ○
13		3.	4.	2	○ 1	
14.		4.	3	1.	○	2
15	2. ○	4.		3	○	1
16		4		2 1.	○	3
17		4			○ 1.	3
18		4		1	○	2. 3.
19			4 2.	1	○ 3	
20		3.	2	○ 4		● . 1
21		3	1.	○	4.	2
22			3	○	1	4
23			2 1.	○	3	4
24				○ 2 1.	3	4
25			1	○	2. 3.	4.
26			2.	○ 3.		4.
27			3.	2	○ 1	4.
28	1. ○	3.		○	4.	2
29			3 4.	○ 2.	1	
30		4.	2.	1.	○	● . 3
31		4.		○	1	3

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.  \*f

II.  \*f

III.  \*c \*f

IV. No Eclipse  of this Satellite.



# SATELLITES OF JUPITER, 1922. 531

JUNE.

## MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	I. Sh. f.	0 48	9	II. Tr. c.	4 40	16	II. Sh. f.	12 10	24	I. Sh. f.	1 1
	I. Im.	18 38		II. Sh. c.	7 3		I. Tr. c.	19 42		III. Tr. c.	6 0
	I. E. f.	21 56.3		II. Tr. f.	7 15		I. Sh. c.	20 56		III. Tr. f.	* 8 27
				II. Sh. f.	* 9 34		I. Tr. f.	21 54		III. Sh. c.	* 11 13
				I. Tr. c.	17 50		I. Sh. f.	23 6		III. Sh. f.	13 22
2	II. Tr. c.	2 13		I. Sh. c.	19 1					I. Im.	18 42
	II. Sh. c.	4 27		I. Tr. f.	20 1					I. E. f.	22 9.6
	II. Tr. f.	4 47		I. Sh. f.	21 11						
	II. Sh. f.	6 59		III. Tr. c.	22 21						
	I. Tr. c.	15 58									
	I. Sh. c.	17 6									
	I. Tr. f.	18 10									
	III. Tr. c.	18 38	10	III. Tr. f.	0 45						
	I. Sh. f.	19 16		III. Sh. c.	3 15						
	III. Tr. f.	20 59		III. Sh. f.	5 25						
	III. Sh. c.	23 15		I. Im.	14 56						
				I. E. f.	18 19.8						
				II. Im.	23 46						
3	III. Sh. f.	1 26									
	I. Im.	13 5									
	I. E. f.	16 25.0									
	II. Im.	21 16									
4	II. E. f.	2 9.1									
	I. Tr. c.	* 10 26									
	I. Sh. c.	* 11 34									
	I. Tr. f.	* 12 38									
	I. Sh. f.	13 45									
5	I. Im.	7 33									
	I. E. f.	* 10 53.7									
	II. Tr. c.	15 26									
	II. Sh. c.	17 45									
	II. Tr. f.	18 1									
	II. Sh. f.	20 16									
6	I. Tr. c.	4 54									
	I. Sh. c.	6 3									
	I. Tr. f.	7 5									
	I. Sh. f.	* 8 14									
	III. Im.	* 8 23									
	III. Em.	* 10 48									
	III. E. c.	13 11.6									
	III. E. f.	15 24.2									
7	I. Im.	2 1									
	I. E. f.	5 22.4									
	II. Im.	* 10 31									
	II. E. f.	15 26.9									
	I. Tr. c.	23 22									
8	I. Sh. c.	0 32									
	I. Tr. f.	1 33									
	I. Sh. f.	2 42									
	I. Im.	20 28									
	I. E. f.	23 51.1									

Eclipse commences - - - E. c.  
 „ finishes - - - E. f.

Occultation, immersion - - Im.  
 „ emersion - - Em.

Transit commences - - - Tr. c.  
 „ finishes - - - Tr. f.

Shadow commences - - - Sh. c.  
 „ finishes - - - Sh. f.

532    SATELLITES OF JUPITER, 1922.

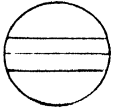
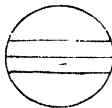
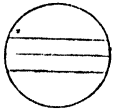
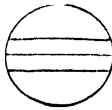
JUNE.

MEAN TIME.

Configurations at 10<sup>h</sup> 0<sup>m</sup> for an inverting Telescope.

Day.	West.			East.		
1	4.	.1	○	2.	3.	
2	.4	2.	○	1.	3.	
3	.4	3.2	.1 ○			
4		.4 3	1 ○.	.2		
5		.3 .4	○	2.		● .1
6		2.	1. ○	.4		● .3
7			○ <sup>2</sup>	.1 .4 3		
8		1.	○	2.	3.	.4
9		2.	○	1. 3.		.4
10		.2 3.	.1 ○			4.
11		3.	○ 1.	.2		4.
12	● ● 1	.3	○	2.		4.
13		2.	1. ○ <sup>3</sup>		4.	
14			.2 4 ○.	.1	.3	
15		4. 1.	○	.2	3.	
16		4.	○	.1 3.		
17	4.	.2 .1 3.	○			
18	4.	3.	○	1.2		
19	.4	.3	.1 ○	2.		
20	1. ○	.4	2. .3 ○			
21		.4	.2 ○	.1	.3	
22		.4 1.	○	.2	.3	
23			○	.4 1	3.	2 ○.
24		.2 .1 3.	○		.4	
25		3.	○	.2 1.		.4
26		.3	.1 ○	2.		.4
27		.2 .3 1	○.			4.
28		.2	○	.3		4. ● .1
29		1.	○	.2	.3 4.	
30			○ 2.	.1 4.	3.	

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.		*f	II.		*f
III.		*c *f	IV.	No Eclipse	 of this Satellite.

# SATELLITES OF JUPITER, 1922. 533

JULY.

## MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	I. Sh. c.	0 45	8	III. Sh. f.	21 18	16	I. Tr. c.	21 50	25	I. E. f.	0 18 <sup>4</sup>
	I. Tr. f.	1 41		I. Im.	22 32		I. Sh. c.	23 4		II. Tr. c.	9 32
	I. Sh. f.	2 56		I. E. f.	1 59 <sup>6</sup>	17	I. Tr. f.	0 2		II. Sh. c.	11 59
III. Tr. c.	* 9 56		9	II. Im.	* 10 2		I. Sh. f.	1 14		II. Tr. f.	12 9
III. Tr. f.	12 24			II. E. f.	15 7 <sup>3</sup>		I. Im.	18 57		II. Sh. f.	14 29
III. Sh. c.	15 12			I. Tr. c.	19 54		I. E. f.	22 23 <sup>3</sup>		I. Tr. c.	18 16
III. Sh. f.	17 20			I. Sh. c.	21 9					I. Sh. c.	19 27
I. Im.	20 36			I. Tr. f.	22 5	18	II. Tr. c.	6 51		I. Tr. f.	20 28
				I. Sh. f.	23 19		II. Sh. c.	* 9 23		I. Sh. f.	21 37
2	I. E. f.	0 4 <sup>6</sup>					II. Tr. f.	* 9 28			
II. Im.	7 25		10	I. Im.	17 1		II. Sh. f.	11 52	26	III. Im.	12 7
II. E. f.	12 31 <sup>9</sup>			I. E. f.	20 28 <sup>3</sup>		I. Tr. c.	16 19		III. Em.	14 38
I. Tr. c.	17 58						I. Sh. c.	17 33		I. Im.	15 24
I. Sh. c.	19 14		11	II. Tr. c.	4 12		I. Tr. f.	18 31		III. E. c.	17 8 <sup>4</sup>
I. Tr. f.	20 10			II. Sh. c.	6 46		I. Sh. f.	19 42		I. E. f.	18 47 <sup>2</sup>
I. Sh. f.	21 24			II. Tr. f.	6 48	19	III. Im.	* 7 58		III. E. f.	19 14 <sup>0</sup>
3	I. Im.	15 5		II. Sh. f.	* 9 16		III. Em.	10 29			
I. E. f.	18 33 <sup>3</sup>			I. Tr. c.	14 23		III. E. c.	13 9 <sup>2</sup>			
				I. Sh. c.	15 38		I. Im.	13 26			
4	II. Tr. c.	1 35		I. Tr. f.	16 34		III. E. f.	15 15 <sup>8</sup>	27	II. Im.	4 40
II. Sh. c.	4 9			I. Sh. f.	17 48		I. E. f.	16 52 <sup>1</sup>		II. E. f.	9 34 <sup>9</sup>
II. Tr. f.	4 11		12	III. Im.	3 52					I. Tr. c.	12 46
II. Sh. f.	6 40			III. Em.	6 23					I. Sh. c.	13 56
I. Tr. c.	12 27			III. E. c.	* 9 9 <sup>5</sup>	20	II. Im.	2 0		I. Tr. f.	14 57
I. Sh. c.	13 43			III. E. f.	11 17 <sup>0</sup>		II. E. f.	7 0 <sup>0</sup>		I. Sh. f.	16 6
I. Tr. f.	14 39			I. Im.	11 30		I. Tr. c.	10 49			
I. Sh. f.	15 53			I. E. f.	14 57 <sup>1</sup>		I. Sh. c.	12 1			
III. Im.	23 50			II. Im.	23 21		I. Tr. f.	13 0	28	I. Im.	9 53
			13	II. E. f.	4 24 <sup>8</sup>	21	I. Sh. f.	14 11		I. E. f.	13 15 <sup>9</sup>
5	III. Em.	2 20		I. Tr. c.	* 8 52		I. Im.	7 55		II. Tr. c.	22 54
III. E. c.	5 9 <sup>8</sup>			I. Sh. c.	* 10 7		I. E. f.	11 20 <sup>8</sup>			
III. E. f.	7 18 <sup>3</sup>			I. Tr. f.	11 4		II. Tr. c.	20 12	29	II. Sh. c.	1 18
I. Im.	* 9 34			I. Sh. f.	12 16		II. Sh. c.	22 41		II. Tr. f.	1 30
I. E. f.	13 2 <sup>1</sup>		14	I. Im.	5 59		II. Tr. f.	22 48		II. Sh. f.	3 47
II. Im.	20 43			I. E. f.	* 9 25 <sup>8</sup>	22	II. Sh. f.	1 11		I. Tr. c.	7 15
				II. Tr. c.	17 32		I. Tr. c.	5 18		I. Sh. c.	* 8 25
6	II. E. f.	1 49 <sup>5</sup>		II. Sh. c.	20 4		I. Sh. c.	6 30		I. Tr. f.	9 27
I. Tr. c.	6 56			II. Tr. f.	20 8		I. Tr. f.	7 29		I. Sh. f.	10 35
I. Sh. c.	8 12			II. Sh. f.	22 34		I. Sh. f.	* 8 40			
I. Tr. f.	* 9 8		15	I. Tr. c.	3 21		III. Tr. c.	22 7	30	III. Tr. c.	2 18
I. Sh. f.	* 10 22			I. Sh. c.	4 35					I. Im.	4 23
				I. Tr. f.	5 33	23	III. Tr. f.	0 36		III. Tr. f.	4 47
7	I. Im.	4 3		I. Sh. f.	6 45		I. Im.	2 25		III. Sh. c.	7 10
I. E. f.	7 30 <sup>8</sup>			III. Tr. c.	18 0		III. Sh. c.	3 11		I. E. f.	7 44 <sup>7</sup>
II. Tr. c.	14 53			III. Tr. f.	20 29		III. Sh. f.	5 15		III. Sh. f.	9 14
II. Sh. c.	17 28			III. Sh. c.	23 11		I. E. f.	5 49 <sup>6</sup>		II. Im.	18 1
II. Tr. f.	17 29		16	I. Im.	0 28		II. Im.	15 20		II. E. f.	22 52 <sup>3</sup>
II. Sh. f.	19 58			III. Sh. f.	1 17		II. E. f.	20 17 <sup>5</sup>	31	I. Tr. c.	1 45
				I. E. f.	3 54 <sup>6</sup>	24	I. Tr. c.	23 47		I. Sh. c.	2 53
8	I. Tr. c.	1 25		II. Im.	12 40		I. Sh. c.	0 59		I. Tr. f.	3 56
I. Sh. c.	2 40			II. E. f.	17 42 <sup>4</sup>		I. Sh. f.	3 9		I. Sh. f.	5 3
I. Tr. f.	3 37						I. Im.	20 54		I. Im.	22 52
I. Sh. f.	4 50										
III. Tr. c.	13 56										
III. Tr. f.	16 25										
III. Sh. c.	19 12										

Eclipse commences - - - E. c.

„ finishes - - - E. f.

Occultation, immersion - - Im.

„ emersion - - Em.

Transit commences - - - Tr. c.

„ finishes - - - Tr. f.

Shadow commences - - - Sh. c.

„ finishes - - - Sh. f.

534    SATELLITES OF JUPITER, 1922.




JULY.

MEAN TIME.

Configurations at 9<sup>h</sup> 0<sup>m</sup> for an inverting Telescope.

Day.	West.			East.		
I		2 <sup>•</sup> 1 <sup>•</sup>	3 <sup>•</sup> ○ 4 <sup>•</sup>			
2		3 <sup>•</sup> 4 <sup>•</sup>	○	1 <sup>•</sup>		● 2
3		4 <sup>•</sup> 3 <sup>•</sup>	1 <sup>•</sup> ○	2 <sup>•</sup>		
4		4 <sup>•</sup>	3 <sup>•</sup> 2 <sup>•</sup> ○	1 <sup>•</sup>		
5		4 <sup>•</sup>	2 <sup>•</sup> ○	1 <sup>•</sup> 3 <sup>•</sup>		
6	1. ○	4 <sup>•</sup>	○	2 <sup>•</sup> 3 <sup>•</sup>		
7		4 <sup>•</sup>	○	2 <sup>•</sup> 3 <sup>•</sup>		
8		4 <sup>•</sup> 2 <sup>•</sup> 1 <sup>•</sup>	○ 3 <sup>•</sup>			
9		3 <sup>•</sup>	4 <sup>•</sup> ○ <sub>2</sub>	1 <sup>•</sup>		
10		3 <sup>•</sup>	1 <sup>•</sup> ○	4 <sup>•</sup> 2 <sup>•</sup>		
11		3 <sup>•</sup> 2 <sup>•</sup>	○ 1 <sup>•</sup>	4 <sup>•</sup>		
12		2 <sup>•</sup> 1 <sup>•</sup>	○ 3 <sup>•</sup>	4 <sup>•</sup>		
13			○ 2 <sup>•</sup> 3 <sup>•</sup>	4 <sup>•</sup>	1 ○	
14			○ 2 <sup>•</sup> 3 <sup>•</sup>	4 <sup>•</sup>	● 1	
15		2 <sup>•</sup> 1 <sup>•</sup>	○ 3 <sup>•</sup>	4 <sup>•</sup>		
16		3 <sup>•</sup> 2 <sup>•</sup>	○ 1 <sup>•</sup>	4 <sup>•</sup>		
17		3 <sup>•</sup> 1 <sup>•</sup>	○ 4 <sup>•</sup> 2 <sup>•</sup>			
18	2. ○	3 <sup>•</sup> 4 <sup>•</sup>	○ 1 <sup>•</sup>			
19	● 3	4 <sup>•</sup> 2 <sup>•</sup> 1 <sup>•</sup>	○			
20		4 <sup>•</sup>	○ 1 <sup>•</sup> 2 <sup>•</sup> 3 <sup>•</sup>			
21	● 1	4 <sup>•</sup>	○ 2 <sup>•</sup> 3 <sup>•</sup>			
22		4 <sup>•</sup>	2 <sup>•</sup> 1 <sup>•</sup> ○	3 <sup>•</sup>		
23		4 <sup>•</sup>	3 <sup>•</sup> 2 <sup>•</sup> ○	1 <sup>•</sup>		
24		4 <sup>•</sup> 3 <sup>•</sup> 1 <sup>•</sup>	○	2 <sup>•</sup>		
25		3 <sup>•</sup> 4 <sup>•</sup>	2 ○ 1 <sup>•</sup>			
26		2 <sup>•</sup> 1 <sup>•</sup>	3 <sup>•</sup> ○ <sub>4</sub>			
27			○ 1 <sup>•</sup>	4 <sup>•</sup> 3 <sup>•</sup>		● 2
28			○ 1 <sup>•</sup>	2 <sup>•</sup> 3 <sup>•</sup> 4 <sup>•</sup>		
29	1. ○		2 <sup>•</sup> ○	3 <sup>•</sup> 4 <sup>•</sup>		
30			2 <sup>•</sup> 3 <sup>•</sup> ○	1 <sup>•</sup> 4 <sup>•</sup>		
31		3 <sup>•</sup> 1 <sup>•</sup>	○ 2 <sup>•</sup>	4 <sup>•</sup>		

Phases of the Eclipses of the Satellites for an inverting Telescope.

I.		*f	II.		*f
III.		*c *f	IV.	No Eclipse	of this Satellite.

## AUGUST.

### MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	I. E. f.	2 13.4	8	I. Sh. c.	23 17	17	I. E. f.	0 32.2	24	II. E. f.	19 53.1
	II. Tr. c.	12 15					III. Im.	0 51		I. Tr. c.	20 40
	II. Sh. c.	14 36					III. Em.	3 21		I. Sh. c.	21 34
	II. Tr. f.	14 51	9	I. Tr. f.	0 24		III. E. o.	5 6.5		I. Tr. f.	22 52
	II. Sh. f.	17 5		I. Sh. f.	1 27		III. E. f.	7 9.2		I. Sh. f.	23 44
	I. Tr. c.	20 14		I. Im.	19 21		II. Im.	12 49	25	I. Im.	17 50
	I. Sh. c.	21 22		III. Im.	20 34		II. E. f.	17 18.7		I. E. f.	20 55.9
	I. Tr. f.	22 26		I. E. f.	22 37.2		I. Tr. o.	18 41			
	I. Sh. f.	23 32		III. Em.	23 4		I. Sh. c.	19 40			
							I. Tr. c.	20 53	26	II. Tr. c.	9 55
2	III. Im.	16 19	10	III. E. c.	1 7.0		I. Sh. f.	21 50		II. Sh. c.	11 46
	I. Im.	17 22		III. E. f.	3 10.7	18	I. Im.	15 50		II. Tr. f.	12 31
	III. Em.	18 50		II. Im.	10 5		I. E. f.	19 0.9		II. Sh. f.	14 15
	I. E. f.	20 42.2		II. E. f.	14 44.3					I. Tr. c.	15 10
	III. E. c.	21 7.5		I. Tr. c.	16 42	19	II. Tr. c.	7 8		I. Sh. c.	16 3
	III. E. f.	23 12.2		I. Sh. c.	17 45		II. Sh. c.	9 9		I. Tr. f.	17 22
				I. Tr. f.	18 54		II. Tr. f.	9 44		I. Sh. f.	18 13
				I. Sh. f.	19 55		II. Sh. f.	11 38	27	I. Im.	12 20
3	II. Im.	7 22					I. Tr. c.	13 11		I. E. f.	15 24.6
	II. E. f.	12 9.7	11	I. Im.	13 50		I. Sh. c.	14 9		III. Tr. c.	19 24
	I. Tr. c.	14 44		I. E. f.	17 5.9		I. Tr. f.	15 23		III. Tr. f.	21 51
	I. Sh. c.	15 51					I. Sh. f.	16 18		III. Sh. c.	23 6
	I. Tr. f.	16 55	12	II. Tr. c.	4 22	20	I. Im.	10 20			
	I. Sh. f.	18 1		II. Sh. c.	6 32		I. E. f.	13 29.7	28	III. Sh. f.	1 7
				II. Tr. f.	6 58		III. Tr. c.	15 4		II. Im.	4 57
4	I. Im.	11 51		II. Sh. f.	9 1		III. Tr. f.	17 32		II. E. f.	9 10.2
	I. E. f.	15 10.9		I. Tr. c.	11 12		III. Sh. c.	19 7		I. Tr. c.	9 40
				I. Sh. c.	12 14		III. Sh. f.	21 9		I. Sh. c.	10 32
5	II. Tr. c.	1 37		I. Tr. f.	13 23	21	II. Im.	2 11		I. Tr. f.	11 52
	II. Sh. c.	3 55		I. Sh. f.	14 24		II. E. f.	6 35.9	29	I. Im.	6 50
	II. Tr. f.	4 13					I. Tr. c.	* 7 41		I. E. f.	9 53.3
	II. Sh. f.	6 24					I. Sh. c.	8 37		II. Tr. c.	23 19
	I. Tr. c.	9 13	13	I. Im.	8 20		I. Tr. f.	9 52			
	I. Sh. c.	10 19		III. Tr. c.	10 47	22	I. Sh. f.	10 47			
	I. Tr. f.	11 25		I. E. f.	11 34.7						
	I. Sh. f.	12 29		III. Tr. f.	13 15		I. Im.	4 50	30	II. Sh. c.	1 4
6	I. Im.	6 21		III. Sh. c.	15 9		II. Tr. c.	20 31		II. Tr. f.	1 55
	III. Tr. c.	6 31		III. Sh. f.	17 11		II. Sh. c.	22 27		II. Sh. f.	3 33
	III. Tr. f.	9 0		II. Im.	23 27		II. Tr. f.	23 7		I. Tr. c.	4 10
	I. E. f.	9 39.7	14	II. E. f.	4 1.5	23	II. Sh. f.	0 56		I. Sh. c.	5 0
	III. Sh. c.	11 10		I. Tr. c.	5 42		I. Tr. c.	2 11		I. Tr. f.	6 22
	III. Sh. f.	13 12		I. Sh. c.	6 43		I. Sh. c.	3 6		I. Sh. f.	* 7 10
	II. Im.	20 44		I. Tr. f.	* 7 53		I. Im.	23 20	31	I. Im.	1 20
				I. Sh. f.	8 53					I. E. f.	4 22.1
7	II. E. f.	1 27.0								III. Im.	9 34
	I. Tr. c.	3 43	15	I. Im.	2 50					III. Em.	12 1
	I. Sh. c.	4 48		I. E. f.	6 3.4					III. E. c.	13 6.1
	I. Tr. f.	5 54		II. Tr. c.	17 45	24	I. E. f.	2 27.2		III. E. f.	15 7.1
	I. Sh. f.	6 58		II. Sh. c.	19 50		III. Im.	5 12		II. Im.	18 19
				II. Tr. f.	20 21		III. Em.	7 40		II. E. f.	22 27.2
				II. Sh. f.	22 19		III. E. c.	9 6.5		I. Tr. c.	22 40
8	I. Im.	0 51					III. E. f.	11 8.4		I. Sh. c.	23 29
	I. E. f.	4 8.4	16	I. Tr. c.	0 11		II. Im.	15 34			
	II. Tr. c.	14 59		I. Sh. c.	1 11						
	II. Sh. c.	17 13		I. Tr. f.	2 23						
	II. Tr. f.	17 35		I. Sh. f.	3 21						
	II. Sh. f.	19 42		I. Im.	21 20						
	I. Tr. c.	22 12									

Eclipse commences - - - E. c.

„ finishes - - - E. f.

Occultation, immersion - - Im.

„ emersion - - Em.

Transit commences - - - Tr. c.

„ finishes - - - Tr. f.

Shadow commences - - - Sh. c.

„ finishes - - - Sh. f.

536    SATELLITES OF JUPITER, 1922.

AUGUST.

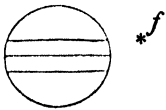
MEAN TIME.

Configurations at 7<sup>h</sup> 45<sup>m</sup> for an inverting Telescope.

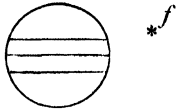
Day.	West.	East.
1	.3	○ 2 <sup>·</sup> 1 <sup>·</sup> 4 <sup>·</sup>
2	2 <sup>·</sup> 1 <sup>·</sup> 3 <sup>·</sup>	○ 4 <sup>·</sup>
3	● 2 <sup>·</sup>	○ 4 <sup>·</sup> 1 <sup>·</sup> 3 <sup>·</sup>
4		○ 4 <sup>·</sup> 1 <sup>·</sup> 2 <sup>·</sup> 3 <sup>·</sup>
5	4 <sup>·</sup> 2 <sup>·</sup>	○ 1 <sup>·</sup> 3 <sup>·</sup>
6	3 <sup>·</sup> ○ 4 <sup>·</sup> 2 <sup>·</sup>	○ ● 1 <sup>·</sup>
7	4 <sup>·</sup> 3 <sup>·</sup> 1 <sup>·</sup>	○ 2 <sup>·</sup>
8	4 <sup>·</sup> 3 <sup>·</sup>	○ 1 <sup>·</sup> 2 <sup>·</sup>
9	4 <sup>·</sup> 2 <sup>·</sup> 3 <sup>·</sup> 1 <sup>·</sup>	○
10	4 <sup>·</sup>	○ 2 <sup>·</sup> 1 <sup>·</sup> 3 <sup>·</sup>
11	4 <sup>·</sup> 1 <sup>·</sup>	○ 2 <sup>·</sup> 3 <sup>·</sup>
12		○ 1 <sup>·</sup> 3 <sup>·</sup>
13	2 <sup>·</sup>	○ 1 <sup>·</sup> 4 <sup>·</sup>
14	1 <sup>·</sup> ○ 3 <sup>·</sup>	○ 2 <sup>·</sup> 4 <sup>·</sup>
15	3 <sup>·</sup>	○ 1 <sup>·</sup> 2 <sup>·</sup> 4 <sup>·</sup>
16	3 <sup>·</sup> 2 <sup>·</sup> 1 <sup>·</sup>	○ 4 <sup>·</sup>
17	2 <sup>·</sup>	○ 3 <sup>·</sup> 1 <sup>·</sup> 4 <sup>·</sup>
18	1 <sup>·</sup>	○ 2 <sup>·</sup> 3 <sup>·</sup> 4 <sup>·</sup>
19		○ 1 <sup>·</sup> 4 <sup>·</sup> 3 <sup>·</sup> 2 <sup>·</sup> ○
20	2 <sup>·</sup> 1 <sup>·</sup>	○ 4 <sup>·</sup> 3 <sup>·</sup>
21	3 <sup>·</sup> 4 <sup>·</sup>	○ 2 <sup>·</sup> 1 <sup>·</sup> ○
22	3 <sup>·</sup> 4 <sup>·</sup>	○ 2 <sup>·</sup> ● 1 <sup>·</sup>
23	4 <sup>·</sup> 3 <sup>·</sup> 2 <sup>·</sup> 1 <sup>·</sup>	○
24	4 <sup>·</sup> 2 <sup>·</sup>	○ 3 <sup>·</sup> 1 <sup>·</sup>
25	4 <sup>·</sup> 1 <sup>·</sup>	○ 2 <sup>·</sup> 3 <sup>·</sup>
26	4 <sup>·</sup>	○ 2 <sup>·</sup> 1 <sup>·</sup> 3 <sup>·</sup>
27	4 <sup>·</sup> 2 <sup>·</sup> 1 <sup>·</sup>	○ 3 <sup>·</sup>
28	4 <sup>·</sup> 3 <sup>·</sup>	○ 1 <sup>·</sup> ● 2 <sup>·</sup>
29	● 1 <sup>·</sup> 3 <sup>·</sup>	○ 4 <sup>·</sup> 2 <sup>·</sup>
30	3 <sup>·</sup> 2 <sup>·</sup> 1 <sup>·</sup>	○ 4 <sup>·</sup>
31	2 <sup>·</sup>	○ 3 <sup>·</sup> 1 <sup>·</sup> 4 <sup>·</sup>

Phases of the Eclipses of the Satellites for an inverting Telescope.

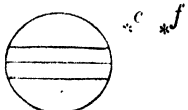
I.



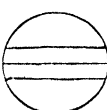
II.



III.



IV. No Eclipse



of this Satellite.

## SEPTEMBER.

### MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	I. Tr. f.	0 52	8	I. Sh. c.	1 23	15	II. E. f.	3 35.1	22	I. Tr. f.	6 53
	I. Sh. f.	1 39		I. Tr. f.	2 52		I. Tr. f.	4 52		I. Sh. f.	7 22
	I. Im.	19 50		I. Sh. f.	3 33		I. Sh. f.	5 27			
	I. E. f.	22 50.8		I. Im.	21 51		I. Im.	23 52			
2	II. Tr. c.	12 43	9	I. E. f.	0 45.6	16	I. E. f.	2 40.4	23	I. Im.	1 54
	II. Sh. c.	14 23		II. Tr. c.	15 32		II. Tr. c.	18 22		I. E. f.	4 35.1
	II. Tr. f.	15 19		II. Sh. c.	17 0		II. Sh. c.	19 37		II. Tr. c.	21 13
	II. Sh. f.	16 52		II. Tr. f.	18 8		II. Tr. f.	20 57		II. Sh. c.	22 14
	I. Tr. c.	17 10		I. Tr. c.	19 10		I. Tr. c.	21 11		I. Tr. c.	23 11
	I. Sh. c.	17 57		II. Sh. f.	19 29		I. Sh. c.	21 46		I. Sh. c.	23 40
	I. Tr. f.	19 22		I. Sh. c.	19 52		II. Sh. f.	22 5		II. Tr. f.	23 47
	I. Sh. f.	20 7		I. Tr. f.	21 22		I. Tr. f.	23 22			
				I. Sh. f.	22 2		I. Sh. f.	23 56			
3	I. Im.	14 21	10	I. Im.	16 22	17	I. Im.	18 23	24	II. Sh. f.	0 42
	I. E. f.	17 19.5		I. E. f.	19 14.4		I. E. f.	21 9.1		I. Tr. f.	1 23
	III. Tr. c.	23 47								I. Sh. f.	1 50
4	III. Tr. f.	2 12	11	III. Tr. c.	4 10	18	III. Tr. c.	8 36		I. Im.	20 24
	III. Sh. c.	3 5		III. Tr. f.	* 6 34		III. Tr. f.	10 58		I. E. f.	23 3.9
	III. Sh. f.	5 5		III. Sh. c.	7 4		III. Sh. c.	11 3			
	II. Im.	7 42		III. Sh. f.	9 3		III. Sh. f.	13 2			
	I. Tr. c.	11 40		II. Im.	10 29		II. Im.	13 16			
	II. E. f.	11 44.2		I. Tr. c.	13 40		I. Tr. c.	15 41			
	I. Sh. c.	12 26		II. E. f.	14 18.2		I. Sh. c.	16 14			
	I. Tr. f.	13 52		I. Sh. c.	14 20		II. E. f.	16 52.0	25	III. Tr. c.	13 2
	I. Sh. f.	14 37		I. Tr. f.	15 52		I. Tr. f.	17 52		III. Sh. c.	15 2
				I. Sh. f.	16 30		I. Sh. f.	18 24		III. Tr. f.	15 22
5	I. Im.	8 51	12	I. Im.	10 52	19	I. Im.	12 53		II. Im.	16 3
	I. E. f.	11 48.2		I. E. f.	13 43.0		I. E. f.	15 37.8		III. Sh. f.	17 0
6	II. Tr. c.	2 7	13	II. Tr. c.	4 57	20	II. Tr. c.	7 47		I. Tr. c.	17 41
	II. Sh. c.	3 41		II. Sh. c.	6 18		II. Sh. c.	8 55		I. Sh. c.	18 9
	II. Tr. f.	4 43		II. Tr. f.	7 32		I. Tr. c.	10 11		II. E. f.	19 25.7
	II. Sh. f.	6 10		I. Tr. c.	8 10		II. Tr. f.	10 22		I. Tr. f.	19 53
	I. Tr. c.	6 10		II. Sh. f.	8 47		I. Sh. c.	10 43		I. Sh. f.	20 19
	I. Sh. c.	6 55		I. Sh. c.	8 49		II. Sh. f.	11 23			
	I. Tr. f.	8 22		I. Tr. f.	10 22		I. Tr. f.	12 22	26	I. Im.	14 54
	I. Sh. f.	9 5		I. Sh. f.	10 59		I. Sh. f.	12 53		I. E. f.	17 32.5
7	I. Im.	3 21	14	I. Im.	5 22	21	I. Im.	7 23	27	II. Tr. c.	10 38
	I. E. f.	6 17.0		I. E. f.	8 11.8		I. E. f.	10 6.5		II. Sh. c.	11 32
	III. Im.	13 57		III. Im.	18 22		III. Im.	22 48		I. Tr. c.	12 12
	III. Em.	16 23		III. Em.	20 46					I. Sh. c.	12 37
	III. E. c.	17 5.5		III. E. c.	21 4.4					II. Tr. f.	13 12
	III. E. f.	19 5.6		III. E. f.	23 3.7					II. Sh. f.	14 0
	II. Im.	21 6		II. Im.	23 52	22	II. Im.	2 39		I. Tr. f.	14 23
8	I. Tr. c.	0 40	15	I. Tr. c.	2 41		III. E. f.	3 1.6		I. Sh. f.	14 47
	II. E. f.	1 1.2		I. Sh. c.	3 17		I. Tr. c.	4 41			
							I. Sh. c.	5 12			
							II. E. f.	6 8.9			

Eclipse commences - - - E. c.  
 „ finishes - - - E. f.

Transit commences - - - Tr. c.  
 „ finishes - - - Tr. f.

Occultation, immersion - - Im.  
 „ emersion - - Em.

Shadow commences - - - Sh. c.  
 „ finishes - - - Sh. f.

SEPTEMBER.

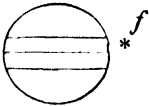
MEAN TIME.

Configurations at 6<sup>h</sup> 30<sup>m</sup> for an inverting Telescope.

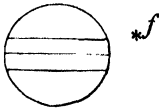
Day.	West.		East.	
1		1 <sup>•</sup> ○	2 <sup>•</sup> 3 <sup>•</sup>	4 <sup>•</sup>
2		○	2 <sup>•</sup> 1 <sup>•</sup>	3 <sup>•</sup> 4 <sup>•</sup>
3		2 <sup>•</sup> 1 <sup>•</sup> ○	3 <sup>•</sup>	4 <sup>•</sup>
4		3 <sup>•</sup> 1 <sup>•</sup> ○ 2 <sup>•</sup> 1 <sup>•</sup>		4 <sup>•</sup>
5		3 <sup>•</sup> 1 <sup>•</sup> ○	2 <sup>•</sup> 4 <sup>•</sup>	
6		3 <sup>•</sup> 2 <sup>•</sup> ○		1 ○
7		2 <sup>•</sup> 3 <sup>•</sup> ○ 1 <sup>•</sup>		
8		4 <sup>•</sup> 1 <sup>•</sup> ○	2 <sup>•</sup> 3 <sup>•</sup>	
9		4 <sup>•</sup> ○	1 <sup>•</sup> 2 <sup>•</sup>	3 <sup>•</sup>
10		4 <sup>•</sup> 2 <sup>•</sup> 1 <sup>•</sup> ○	3 <sup>•</sup>	
11	3 ○	4 <sup>•</sup> 2 <sup>•</sup> ○ 1 <sup>•</sup>		
12		4 <sup>•</sup> 3 <sup>•</sup> 1 <sup>•</sup> ○	2 <sup>•</sup>	
13	2 ○	4 <sup>•</sup> 3 <sup>•</sup> ○ 1 <sup>•</sup>		
14	• ● 1	2 <sup>•</sup> 4 <sup>•</sup> 3 <sup>•</sup> ○		
15		1 <sup>•</sup> ○	4 <sup>•</sup> 2 <sup>•</sup> 3 <sup>•</sup>	
16		○	1 <sup>•</sup> 2 <sup>•</sup> 4 <sup>•</sup> 3 <sup>•</sup>	
17		2 <sup>•</sup> 1 <sup>•</sup> ○	3 <sup>•</sup>	4 <sup>•</sup>
18		2 <sup>•</sup> 3 ○ 1 <sup>•</sup>		4 <sup>•</sup>
19		3 <sup>•</sup> 1 <sup>•</sup> ○	2 <sup>•</sup>	4 <sup>•</sup>
20		3 <sup>•</sup> 2 ○ 1 <sup>•</sup>		4 <sup>•</sup>
21		2 <sup>•</sup> 3 <sup>•</sup> ○ 1 <sup>•</sup>		4 <sup>•</sup>
22	1 ○	○	2 <sup>•</sup> 3 <sup>•</sup> 4 <sup>•</sup>	
23		○	4 <sup>•</sup> 1 <sup>•</sup> 2 <sup>•</sup> 3 <sup>•</sup>	
24		4 <sup>•</sup> 2 <sup>•</sup> ○		3 <sup>•</sup>
25		4 <sup>•</sup> 2 <sup>•</sup> ○	3 <sup>•</sup> 1 <sup>•</sup>	
26		4 <sup>•</sup> 3 <sup>•</sup> 1 <sup>•</sup> ○	2 <sup>•</sup>	
27		4 <sup>•</sup> 3 <sup>•</sup> ○	2 <sup>•</sup> 1 <sup>•</sup>	

Phases of the Eclipses of the Satellites for an inverting Telescope.

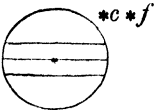
I.



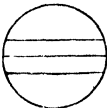
II.



III.



IV. No Eclipse



of this Satellite.



## SATELLITES OF JUPITER, 1922. 539

NOVEMBER.

MEAN TIME.

JUPITER BEING NEAR THE SUN,  
THE PHENOMENA OF THE SATELLITES OF JUPITER  
ARE NOT GIVEN FROM SEPTEMBER 27 UNTIL NOVEMBER 17.

<u>Day.</u>		<u>h m</u>	<u>Day.</u>		<u>h m</u>	<u>Day.</u>		<u>h m</u>	<u>Day.</u>		<u>h m</u>
17	I. Em.	1 47	21	I. Sh. f.	11 28	25	II. E. c.	2 44·5	29	III. Sh. c.	2 45
	I. Sh. c.	20 22		I. Tr. f.	11 57		II. Em.	6 15		III. Sh. f.	4 36
	I. Tr. c.	20 47		II. E. c.	13 27·8		III. E. c.	12 51·5		III. Tr. c.	5 8
	I. Sh. f.	22 31		II. Em.	16 52		III. E. f.	14 43·3		III. Tr. f.	7 6
	I. Tr. f.	22 57		III. Sh. c.	22 48		III. Im.	15 2		I. E. c.	8 29·9
							III. Em.	17 2		I. Em.	11 17
							I. E. c.	19 33·0			
							I. Em.	22 17			
18	II. E. c.	0 11·0	22	III. Sh. f.	0 40						
	II. Em.	3 28		III. Tr. c.	0 43						
	III. E. c.	8 53·3		III. Tr. f.	2 44						
	III. Em.	12 38		I. E. c.	6 36·0						
	I. E. c.	17 39·0		I. Em.	9 17	26	I. Sh. c.	16 44			
	I. Em.	20 17					I. Tr. c.	17 17			
							I. Sh. f.	*18 53			
							I. Tr. f.	19 27			
							II. Sh. c.	21 43			
							II. Tr. c.	22 52	30	I. Sh. c.	5 40
19	I. Sh. c.	14 50	23	I. Sh. c.	3 47					I. Tr. c.	6 17
	I. Tr. c.	15 17		I. Tr. c.	4 17					I. Sh. f.	7 50
	I. Sh. f.	17 0		I. Sh. f.	5 56					I. Tr. f.	8 27
	I. Tr. f.	17 27		I. Tr. f.	6 27					II. Sh. c.	11 1
	II. Sh. c.	19 7		II. Sh. c.	8 25					II. Tr. c.	12 16
	II. Tr. c.	20 2		II. Tr. c.	9 27	27	II. Sh. f.	0 8		II. Sh. f.	13 26
	II. Sh. f.	21 33		II. Sh. f.	10 50		II. Tr. f.	1 18		II. Tr. f.	14 42
	II. Tr. f.	22 29		II. Tr. f.	11 54		I. E. c.	14 1·5			
				.			I. Em.	16 47			
			24	I. E. c.	1 4·6						
				I. Em.	3 47						
				I. Sh. c.	22 15						
				I. Tr. c.	22 47	28	I. Sh. c.	11 12			
							I. Tr. c.	11 47			
							I. Sh. f.	13 21			
							I. Tr. f.	13 57			
							II. E. c.	16 1·3			
							II. Em.	19 38			
20	I. E. c.	12 7·6									
	I. Em.	14 47									
21	I. Sh. c.	9 18	25	I. Sh. f.	0 25						
	I. Tr. c.	9 47		I. Tr. f.	0 57						

Eclipse commences	-	-	-	E. c.
„ finishes	-	-	-	E. f.

Transit commences - - - Tr. c.  
,, finishes - - - Tr. f.

Occultation, immersion - - Im.  
 „ emersion - - Em.

Shadow commences - - - Sh. c  
,, finishes - - - Sh. t.

540 SATELLITES OF JUPITER, 1922.

NOVEMBER.

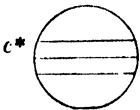
MEAN TIME.

Configurations at 18<sup>h</sup> 30<sup>m</sup> for an inverting Telescope.

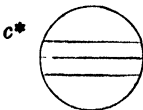
Day.	West.				East.			
17		4		3 2	○ 1			
18	● 1	4			○ 3 2			
19		4		1	○ 2		3	
20			2 4	○ 1		3		
21				1	○ 2 4			
22			3	○	1 2	4		
23		3	2 1	○			4	
24			3 2	○ 1			4	
25				1	○ 3 2		4	
26	1. ○				○ 2 3		4	
27			2	○ 1		3 4		
28	● 2			1	○ 3 4			
29			3	○ 4	1 2			
30		3 4	2 1	○				

Phases of the Eclipses of the Satellites for an inverting Telescope.

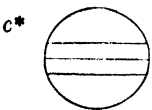
I.



II.

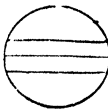


III.



IV.

No Eclipse



of this Satellite.

# SATELLITES OF JUPITER, 1922. 541

DECEMBER.

## MEAN TIME.

Day.		h m	Day.		h m	Day.		h m	Day.		h m
1	I. E. c.	2 58.5	9	I. Sh. f.	4 11	17	III. E. c.	0 46.4	24	III. Em.	10 23
	I. Em.	5 47		I. Tr. f.	4 56		I. E. c.	1 14.2			
				II. E. c.	7 51.6		III. E. f.	2 36.6	25	I. Sh. c.	0 17
2	I. Sh. c.	0 9		II. Em.	11 46		III. Im.	4 15		I. Tr. c.	1 13
	I. Tr. c.	0 47		III. E. c.	20 48.5		I. Em.	4 16		I. Sh. f.	2 26
	I. Sh. f.	2 18		III. E. f.	22 39.2		III. Em.	6 6		I. Tr. f.	3 22
	I. Tr. f.	2 57		I. E. c.	23 20.6		I. Sh. c.	22 24		II. Sh. c.	8 5
	II. E. c.	5 18.0		III. Im.	23 53		I. Tr. c.	23 15		II. Tr. c.	10 1
	II. Em.	9 1				18	I. Sh. f.	0 33		II. Sh. f.	10 29
	III. E. c.	16 50.4	10	III. Em.	1 47		I. Tr. f.	1 24		II. Tr. f.	12 23
	III. E. f.	*18 41.5		I. Em.	2 17		II. Sh. c.	5 30		I. E. c.	21 36.2
	III. Im.	19 28		I. Sh. c.	20 30		II. Tr. c.	7 16			
	III. Em.	21 25		I. Tr. c.	21 16		II. Sh. f.	7 54	26	I. Em.	0 44
	I. E. c.	21 26.8		I. Sh. f.	22 40		II. Tr. f.	9 38		I. Sh. c.	*18 45
				I. Tr. f.	23 26		I. E. c.	19 42.7		I. Tr. c.	19 43
3	I. Em.	0 17					I. Em.	22 46		I. Sh. f.	20 54
	I. Sh. c.	*18 37	11	II. Sh. c.	2 54					I. Tr. f.	21 52
	I. Tr. c.	19 17		II. Tr. c.	4 29	19	I. Sh. c.	*16 52			
	I. Sh. f.	20 46		II. Sh. f.	5 19		I. Tr. c.	*17 45			
	I. Tr. f.	21 26		II. Tr. f.	6 53		I. Sh. f.	*19 1	27	II. E. c.	2 15.7
				I. E. c.	*17 49.1		I. Tr. f.	19 54		II. Em.	6 36
4	II. Sh. c.	0 19		I. Em.	20 47		II. E. c.	23 42.0		I. E. c.	16 4.5
	II. Tr. c.	1 41								III. Sh. c.	*18 37
	II. Sh. f.	2 44	12	I. Sh. c.	14 59					I. Em.	*19 14
	II. Tr. f.	4 6		I. Tr. c.	15 46	20	II. Em.	3 52		III. Sh. f.	20 25
	I. E. c.	15 55.3		I. Sh. f.	*17 8		I. E. c.	14 11.0		III. Tr. c.	22 37
	I. Em.	*18 47		I. Tr. f.	*17 55		III. Sh. c.	14 39			
				II. E. c.	21 8.3		III. Sh. f.	16 28			
5	I. Sh. c.	13 5					I. Em.	*17 16			
	I. Tr. c.	13 47	13	II. Em.	1 8		III. Tr. c.	*18 17	28	III. Tr. f.	0 22
	I. Sh. f.	15 15		III. Sh. c.	10 41		III. Tr. f.	20 6		I. Sh. c.	13 14
	I. Tr. f.	15 56		III. Sh. f.	12 31	21	I. Sh. c.	11 20		I. Tr. c.	14 12
	II. E. c.	*18 34.8		III. Tr. c.	13 56		I. Tr. c.	12 14		I. Sh. f.	15 23
	II. Em.	22 23		I. Em.	15 17		I. Sh. f.	13 29		I. Tr. f.	*16 21
6	III. Sh. c.	6 43		III. Tr. f.	15 48		I. Tr. f.	14 23		II. Sh. c.	21 22
	III. Sh. f.	8 33	14				II. Sh. c.	*18 47		II. Tr. c.	23 24
	III. Tr. c.	9 32					II. Tr. c.	20 39		II. Sh. f.	23 46
	I. E. c.	10 23.7					II. Sh. f.	21 11			
	III. Tr. f.	11 27		I. Sh. c.	9 27		II. Tr. f.	23 1	29	II. Tr. f.	2 45
	I. Em.	13 17		I. Tr. c.	10 15					I. E. c.	10 33.0
				I. Sh. f.	11 36					I. Em.	13 43
				I. Tr. f.	12 25	22	I. E. c.	8 39.5			
7	I. Sh. c.	7 34		II. Sh. c.	16 12		I. Em.	11 45			
	I. Tr. c.	8 16		II. Tr. c.	*17 52				30	I. Sh. c.	7 42
	I. Sh. f.	9 43		II. Sh. f.	*18 36					I. Tr. c.	8 42
	I. Tr. f.	10 26				23	I. Sh. c.	5 49		I. Sh. f.	9 51
	II. Sh. c.	13 36					I. Tr. c.	6 44		I. Tr. f.	10 51
	II. Tr. c.	15 5	15	I. E. c.	6 45.9		I. Sh. f.	7 58		II. E. c.	15 32.5
	II. Sh. f.	16 1		I. Em.	9 47		I. Tr. f.	8 53		II. Em.	19 57
	II. Tr. f.	*17 29					II. E. c.	12 58.8			
							II. Em.	*17 14			
8	I. E. c.	4 52.2	16	I. Sh. c.	3 55				31	I. E. c.	5 1.3
	I. Em.	7 47		I. Tr. c.	4 45	24	I. E. c.	3 7.8		I. Em.	8 13
				I. Sh. f.	6 5		III. E. c.	4 43.9		III. E. c.	8 41.3
				I. Tr. f.	6 55		I. Em.	6 15		III. E. f.	10 30.4
9	I. Sh. c.	2 2		II. E. c.	10 25.2		III. E. f.	6 33.5		III. Im.	12 53
	I. Tr. c.	2 46		II. Em.	14 30		III. Im.	8 35		III. Em.	14 38

Eclipse commences - - - E. c.

„ finishes - - - E. f.

Occultation, immersion - - Im.

„ emersion - - Em.

Transit commences - - - Tr. c.

„ finishes - - - Tr. f.

Shadow commences - - - Sh. c.

„ finishes - - - Sh. f.

542    SATELLITES OF JUPITER, 1922.

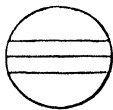
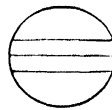


DECEMBER.

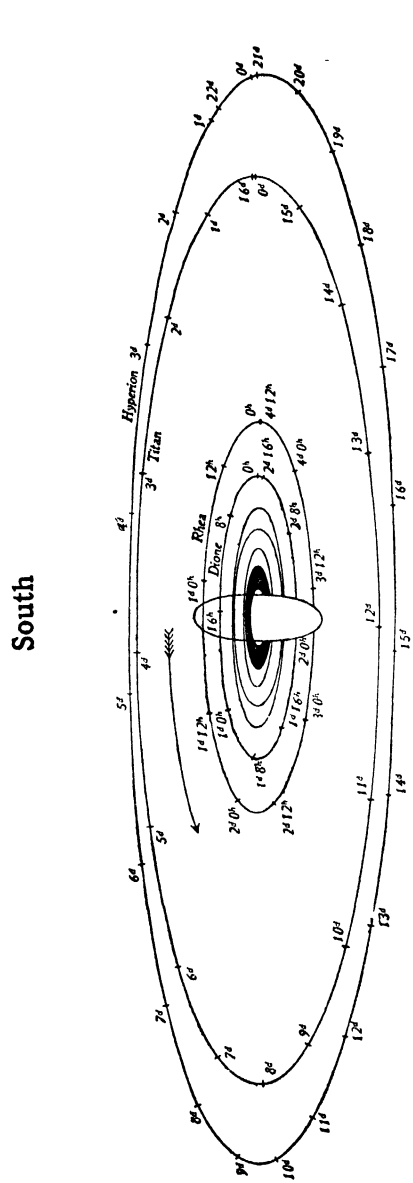
MEAN TIME.

Configurations at 18<sup>h</sup> 0<sup>m</sup> for an inverting Telescope.

Day.	West.	East.
1	4' .3 .2	○ 1'
2	• ● 3 4'	○ 1' 2'
3	4'	1 ○ • 2' .3
4	4' 2'	○ 3' ● . 1
5	4' 1' .2	○ 3'
6	4' 3' ○	1' 2'
7	3' 1' .4 2' ○	
8	3' .2	○ 1' .4
9	1' .3	○ 2' 4'
10		○ 1' 2' .3 4'
11	• ● 1 2'	○ 3' 4'
12		2' 1' ○ 3' 4'
13		3' ○ 1' 2' 4'
14	3' 1' ○	4' 2 ○
15	3' .2	○ 1' 4'
16		3' 4' ○ 2'
17	4' 4'	○ 1' .3 2'
18	4' 2' 1' ○	3'
19	4' 2' ○	3' 1 ○
20	4' 3' ○	1' 2'
21	4' 3' 1' ○	2'
22	4' .3 2' ○	1'
23	4' .3 1' ○	2'
24		4' ○ 3' 2' 1'
25		2' 1' ○ 4' 3'
26		2' ○ 1' 3' 4'
27	• ● 1	3' ○ 1' 2' 4'
28		3' 1' ○ 2' 4'
29		3' 2' ○ 1' 4'
30	• ● 2	3' 1' ○ 4'
31		○ 3' 1' 2' 4'
32		1' 2' ○ 4' 3'

Phases of the Eclipses of the Satellites for an inverting Telescope.

I. 	II. 
III. 	IV. No Eclipse 



NAMES OF THE SATELLITES.	MEAN SYNODIC PERIODS.		
	d	h	m
I. Mimas.	0	22.6	
II. Enceladus.	1	8.9	
III. Tethys.	1	21.3	
IV. Dione.	2	17.7	
V. Rhea.	4	12.5	
VI. Titan.	15	23.3	
VII. Hyperion.	21	7.6	
VIII. Iapetus.	79	22.1	
IX. Phœbe.	523	15.6	

APPARENT ORBITS OF THE SEVEN INNER SATELLITES OF SATURN, AT DATE OF OPPOSITION, MARCH 25, 1922, AS SEEN IN AN INVERTING TELESCOPE, AND ELONGATED IN THE RATIO OF THREE TO ONE IN THE DIRECTION OF THEIR MINOR AXES.

# 544      SATELLITES OF SATURN, 1922.

## MIMAS.

Greenwich Mean Time of Eastern Elongation.

Jan.	d	h	Feb.	d	h	Mar.	d	h	Apr.	d	h	June	d	h	July	d	h
	1	10.5		10	0.4		21	14.2		30	4.0		8	18.0		18	8.1
	2	9.1		10	23.0		22	12.8	May	1	2.6		9	16.6		19	6.7
	3	7.7		11	21.6		23	11.4		2	1.2		10	15.2		20	5.4
	4	6.4		12	20.2		24	10.0		2	23.8		11	13.8		21	4.0
	5	5.0		13	18.8		25	8.6		3	22.5		12	12.4		22	2.6
	6	3.6		14	17.4		26	7.2		4	21.1		13	11.0		23	1.3
	7	2.2		15	16.0		27	5.9		5	19.7		14	9.6		23	23.9
	8	0.8		16	14.7		28	4.5		6	18.3		15	8.3			
	8	23.4		17	13.3		29	3.1		7	16.9		16	6.9	Dec.	1	2.1
	9	22.0		18	11.9		30	1.7		8	15.5		17	5.6		2	0.7
	10	20.7		19	10.5		31	0.3		9	14.2		18	4.2		2	23.3
	11	19.3		20	9.1		31	22.9		10	12.8		19	2.8		3	21.9
	12	17.9		21	7.7	Apr.	1	21.5		11	11.4		20	1.4		4	20.5
	13	16.5		22	6.4		2	20.1		12	10.0		21	0.0		5	19.1
	14	15.1		23	5.0		3	18.8		13	8.6		21	22.6		6	17.7
	15	13.7		24	3.6		4	17.4		14	7.3		22	21.3		7	16.3
	16	12.4		25	2.2		5	16.0		15	5.9		23	19.9		8	15.0
	17	11.0		26	0.8		6	14.6		16	4.5		24	18.5		9	13.6
	18	9.6		26	23.4		7	13.2		17	3.1		25	17.2		10	12.2
	19	8.2		27	22.0		8	11.8		18	1.7		26	15.8		11	10.8
	20	6.8		28	20.6		9	10.5		19	0.3		27	14.4		12	9.5
	21	5.5	Mar.	1	19.3		10	9.1		19	23.0		28	13.0		13	8.1
	22	4.1		2	17.9		11	7.7		20	21.6		29	11.6		14	6.7
	23	2.7		3	16.5		12	6.3		21	20.2		30	10.3		15	5.4
	24	1.3		4	15.1		13	4.9		22	18.8	July	1	8.9		16	4.0
	24	23.9		5	13.7		14	3.5		23	17.4		2	7.5		17	2.6
	25	22.5		6	12.3		15	2.1		24	16.1		3	6.2		18	1.2
	26	21.1		7	11.0		16	0.8		25	14.7		4	4.8		18	23.8
	27	19.8		8	9.6		16	23.4		26	13.3		5	3.4		19	22.4
	28	18.4		9	8.2		17	22.0		27	11.9		6	2.0		20	21.1
	29	17.0		10	6.8		18	20.6		28	10.5		7	0.6		21	19.7
	30	15.6		11	5.4		19	19.2		29	9.2		7	23.2		22	18.4
	31	14.2		12	4.0		20	17.8		30	7.8		8	21.8		23	17.0
Feb.	1	12.8		13	2.6		21	16.4		31	6.4		9	20.5		24	15.6
	2	11.4		14	1.2		22	15.1	June	1	5.0		10	19.1		25	14.2
	3	10.1		14	23.8		23	13.7		2	3.6		11	17.8		26	12.8
	4	8.7		15	22.5		24	12.3		3	2.3		12	16.4		27	11.4
	5	7.3		16	21.1		25	10.9		4	0.9		13	15.0		28	10.0
	6	5.9		17	19.7		26	9.5		4	23.5		14	13.6		29	8.6
	7	4.5		18	18.3		27	8.1		5	22.1		15	12.2		30	7.3
	8	3.1		19	16.9		28	6.8		6	20.7		16	10.9		31	5.9
	9	1.7		20	15.5		29	5.4		7	19.4		17	9.5		32	4.5

# SATELLITES OF SATURN, 1922. 545

## ENCELADUS.

Greenwich Mean Time of Eastern Elongation.

Jan.	d h	Feb.	d h	Mar.	d h	Apr.	d h	June	d h	July	d h
	1 17.3	10 10.8		22 4.2		30 21.7		9 15.4		19 9.3	
	3 2.1	11 19.7		23 13.1		May 2 6.6		11 0.3		20 18.2	
	4 11.0	13 4.6		24 22.0		3 15.5		12 9.2		22 3.1	
	5 19.9	14 13.5		26 6.9		5 0.4		13 18.0		23 12.0	
	7 4.8	15 22.3		27 15.8		6 9.2		15 2.9		24 20.9	
	8 13.7	17 7.2		29 0.6		7 18.1		16 11.8		26 5.8	
	9 22.6	18 16.1		30 9.5		9 3.0		17 20.7		27 14.6	
	11 7.4	20 1.0		31 18.4		10 11.9		19 5.6		28 23.5	
	12 16.3	21 9.8	Apr.	2 3.3		11 20.8		20 14.5		30 8.4	
	14 1.2	22 18.7		3 12.1		13 5.6		21 23.4		31 17.3	
	15 10.1	24 3.6		4 21.0		14 14.5		23 8.3			
	16 19.0	25 12.5		6 5.9		15 23.4		24 17.2			
	18 3.9	26 21.4		7 14.8		17 8.3		26 2.1		Dec. 10 7.5	
	19 12.7	28 6.2		8 23.6		18 17.2		27 11.0		11 16.4	
	20 21.6	Mar. 1 15.1		10 8.5		20 2.1		28 19.9		13 1.3	
	22 6.5	2 24.0		11 17.4		21 11.0		30 4.8		14 10.2	
	23 15.4	4 8.9		13 2.3		22 19.8	July	1 13.6		15 19.1	
	25 0.3	5 17.7		14 11.2		24 4.7		2 22.5		17 4.0	
	26 9.1	7 2.6		15 20.0		25 13.6		4 7.4		18 12.8	
	27 18.0	8 11.5		17 4.9		26 22.5		5 16.3		19 21.7	
	29 2.9	9 20.4		18 13.8		28 7.4		7 1.2		21 6.6	
	30 11.8	11 5.2		19 22.7		29 16.3		8 10.1		22 15.5	
	31 20.7	12 14.1		21 7.6		31 1.2		9 19.0		24 0.4	
Feb.	2 5.5	13 23.0		22 16.4		June 1 10.1		11 3.9		25 9.3	
	3 14.4	15 7.9		24 1.3		2 18.9		12 12.8		26 18.2	
	4 23.3	16 16.7		25 10.2		4 3.8		13 21.7		28 3.1	
	6 8.2	18 1.6		26 19.1		5 12.7		15 6.6		29 12.0	
	7 17.1	19 10.5		28 4.0		6 21.6		16 15.5		30 20.8	
	9 1.9	20 19.4		29 12.8		8 6.5		18 0.4		32 5.7	

## TETHYS.

Greenwich Mean Time of Eastern Elongation.

Jan.	d h	Jan.	d h	Feb.	d h	Feb.	d h	Mar.	d h	Apr.	d h
	1 0.6	19 21.6		7 18.6		26 15.6		17 12.5		5 9.4	
	2 21.9	21 18.9		9 15.9		28 12.9		19 9.8		7 6.7	
	4 19.2	23 16.2		11 13.2		Mar. 2 10.2		21 7.0		9 4.0	
	6 16.5	25 13.5		13 10.5		4 7.4		23 4.3		11 1.3	
	8 13.8	27 10.8		15 7.8		6 4.7		25 1.6		12 22.6	
	10 11.1	29 8.1		17 5.1		8 2.0		26 22.9		14 19.8	
	12 8.4	31 5.4		19 2.4		9 23.3		28 20.2		16 17.1	
	14 5.7	Feb. 2 2.7		20 23.7		11 20.6		30 17.5		18 14.4	
	16 3.0	4 0.0		22 21.0		13 17.9	Apr.	1 14.8		20 11.7	
	18 0.3	5 21.3		24 18.3		15 15.2		3 12.1		22 9.0	

# 546    SATELLITES OF SATURN, 1922.

## TETHYS—continued.

### Greenwich Mean Time of Eastern Elongation.

Apr. 24 6.3	May 15 0.6	June 4 19.0	June 25 13.5	July 16 8.0	Dec. 12 13.1
26 3.6	16 21.9	6 16.3	27 10.8	18 5.4	14 10.4
28 0.9	18 19.2	8 13.6	29 8.1	20 2.7	16 7.8
29 22.2	20 16.5	10 11.0	July 1 5.4	22 0.0	18 5.1
May 1 19.5	22 13.8	12 8.3	3 2.8	23 21.3	20 2.4
3 16.8	24 11.2	14 5.6	5 0.1	25 18.6	21 23.7
5 14.1	26 8.5	16 2.9	6 21.4	27 16.0	23 21.0
7 11.4	28 5.8	18 0.2	8 18.7	29 13.3	25 18.4
9 8.7	30 3.1	19 21.5	10 16.1		27 15.7
11 6.0	June 1 0.4	21 18.8	12 13.4		29 13.0
13 3.3	2 21.7	23 16.2	14 10.7	Dec. 10 15.8	31 10.3

## DIONE.

### Greenwich Mean Time of Eastern Elongation.

Jan. 1 6.7	Feb. 11 7.9	Mar. 24 8.7	May 4 9.6	June 14 10.9	July 25 12.6
4 0.4	14 1.6	27 2.4	7 3.3	17 4.6	28 6.3
6 18.1	16 19.2	29 20.0	9 20.9	19 22.3	31 0.0
9 11.8	19 12.9	Apr. 1 13.7	12 14.6	22 16.0	
12 5.5	22 6.5	4 7.3	15 8.3	25 9.7	
14 23.2	25 0.2	7 1.0	18 2.0	28 3.4	Dec. 9 11.3
17 16.8	27 17.9	9 18.6	20 19.6	30 21.1	12 5.0
20 10.5	Mar. 2 11.5	12 12.3	23 13.3	July 3 14.8	14 22.8
23 4.2	5 5.2	15 6.0	26 7.0	6 8.5	17 16.5
25 21.9	7 22.8	17 23.6	29 0.7	9 2.2	20 10.2
28 15.6	10 16.5	20 17.3	31 18.4	11 20.0	23 3.9
31 9.2	13 10.1	23 10.9	June 3 12.1	14 13.7	25 21.6
Feb. 3 2.9	16 3.8	26 4.6	6 5.8	17 7.4	28 15.3
5 20.6	18 21.4	28 22.3	8 23.5	20 1.1	31 9.0
8 14.2	21 15.1	May 1 15.9	11 17.2	22 18.8	34 2.7

## RHEA.

### Greenwich Mean Time of Eastern Elongation.

Jan. 3 21.2	Feb. 13 12.8	Mar. 26 3.8	May 5 18.9	June 15 10.6	July 26 3.0
8 9.6	18 1.1	30 16.1	10 7.3	19 23.0	30 15.5
12 22.1	22 13.5	Apr. 4 4.5	14 19.6	24 11.5	
17 10.5	27 1.8	8 16.8	19 8.0	29 0.0	
21 22.9	Mar. 3 14.2	13 5.1	23 20.4	July 3 12.5	Dec. 13 8.2
26 11.3	8 2.5	17 17.5	28 8.9	8 1.0	17 20.7
30 23.7	12 14.8	22 5.8	June 1 21.3	12 13.5	22 9.2
Feb. 4 12.1	17 3.2	26 18.2	6 9.7	17 2.0	26 21.7
9 0.4	21 15.5	May 1 6.5	10 22.2	21 14.5	31 10.1



# SATELLITES OF SATURN, 1922. 547

## TITAN.

### Greenwich Mean Time of Greatest Elongation.

d	h	d	h	d	h	d	h	d	h	d	h
Jan. 1	19.2 E	Feb. 18	14.6 E	Apr. 7	7.6 E	May 25	1.6 E	July 11	22.7 E	Nov. 24	23.8 W
9	16.7 W	26	11.4 W	15	3.9 W	June 1	22.2 W	19	20.0 W	Dec. 3	0.9 E
17	18.1 E	Mar. 6	12.4 E	23	5.3 E	10	0.2 E	27	22.5 E	11	0.0 W
25	15.4 W	14	9.0 W	May 1	1.6 W	17	21.0 W	Aug. 4	20.0 W	19	0.8 E
Feb. 2	16.5 E	22	10.0 E	9	3.3 E	25	23.3 E	12	22.5 E		
10	13.6 W	30	6.4 W	16	23.7 W	July 3	20.3 W			26	23.8 W

## HYPERION.

### Greenwich Mean Time of Greatest Elongation.

d	h	d	h	d	h	d	h	d	h	d	h
Jan. 2	16.7 W	Feb. 14	2.5 W	Mar. 28	7.8 W	May 9	12.3 W	June 20	19.9 W	Dec. 8	17.0 W
14	17.6 E	26	1.6 E	Apr. 9	6.2 E	21	11.6 E	July 2	20.7 E	20	19.7 E
23	22.4 W	Mar. 7	5.5 W	18	9.8 W	30	15.6 W	12	1.3 W	30	3.4 W
Feb. 4	22.3 E	19	4.1 E	30	8.5 E	June 11	15.6 E	24	3.0 E		

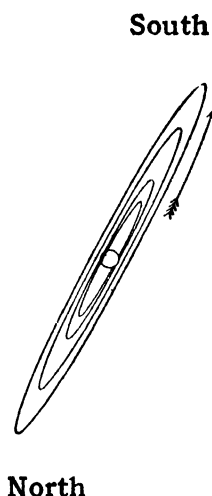
## IAPETUS.

### Greenwich Mean Time of Conjunction and Greatest Elongation.

d	h	d	h	d	h	d	h	d	h	d	h
Jan. 3	18.1 S	Feb. 12	3.7 I	Mar. 23	9.5 S	May 1	9.4 I	June 9	21.6 S	Dec. 9	19.7 E
24	5.7 E	Mar. 3	2.6 W	Apr. 12	13.4 E	20	8.7 W	30	13.8 E	29	0.6 I

ELEMENTS FOR DETERMINING THE GEOCENTRIC POSITION,  
APPEARANCE, AND MAGNITUDE OF SATURN'S RINGS.

Greenwich Mean Midnight.	<i>a</i>	<i>b</i>	<i>P</i>	<i>B</i>	<i>U</i>	<i>ω</i>	<i>B'</i>	<i>U'</i>	Stellar Mag.
Jan. 7	40°33	+4°74	-3 22'6	+ 6 45'3	60 19'8	42 14'8	+4 8'7	12 49'3	+1.0
15	40°89	4°81	3 22'0	6 45'2	60 24'8	42 14'8	4 15'9	13 3'8	1.0
23	41°45	4°84	3 22'1	6 42'1	60 23'6	42 14'7	4 23'1	13 18'3	0.9
31	41°99	4°83	3 22'9	6 36'0	60 16'2	42 14'7	4 30'2	13 32'8	0.9
Feb. 8	42°48	4°77	3 24'3	6 27'1	60 2'9	42 14'7	4 37'4	13 47'3	0.9
16	42°92	+4°68	-3 26'2	+ 6 15'6	59 44'1	42 14'6	+4 44'5	14 1'7	+0.8
24	43°30	4°55	3 28'6	6 2'0	59 20'5	42 14'6	4 51'7	14 16'2	0.8
Mar. 4	43°60	4°39	3 31'4	5 46'6	58 52'9	42 14'6	4 58'8	14 30'7	0.7
12	43°80	4°20	3 34'5	5 30'0	58 22'3	42 14'5	5 5'9	14 45'2	0.7
20	43°91	3°99	3 37'8	5 12'7	57 49'7	42 14'5	5 13'1	14 59'6	0.7
28	43°92	+3°77	-3 41'2	+ 4 55'4	57 16'3	42 14'4	+5 20'2	15 14'1	+0.7
Apr. 5	43°83	3°54	3 44'5	4 38'6	56 43'2	42 14'4	5 27'3	15 28'6	0.7
13	43°64	3°33	3 47'7	4 22'9	56 11'6	42 14'4	5 34'4	15 43'0	0.8
21	43°36	3°14	3 50'6	4 8'8	55 42'5	42 14'3	5 41'4	15 57'5	0.8
29	43°00	2°96	3 53'1	3 56'8	55 16'9	42 14'3	5 48'5	16 11'9	0.9
May 7	42°57	+2°81	-3 55'2	+ 3 47'2	54 55'6	42 14'3	+5 55'6	16 26'4	+1.0
15	42°09	2°70	3 56'8	3 40'4	54 39'2	42 14'2	6 2'6	16 40'8	1.0
23	41°57	2°62	3 57'9	3 36'5	54 28'0	42 14'2	6 9'7	16 55'3	1.1
31	41°02	2°57	3 58'5	3 35'6	54 22'4	42 14'1	6 16'7	17 9'8	1.1
June 8	40°46	2°56	3 58'4	3 37'8	54 22'6	42 14'1	6 23'7	17 24'2	1.2
16	39°90	+2°59	-3 57'8	+ 3 43'0	54 28'6	42 14'1	+6 30'7	17 38'7	+1.2
24	39°35	2°65	3 56'7	3 51'0	54 40'2	42 14'0	6 37'7	17 53'1	1.2
July 2	38°81	2°73	3 55'0	4 1'8	54 57'2	42 14'0	6 44'7	18 7'6	1.2
10	38°29	2°84	3 52'8	4 15'2	55 19'5	42 14'0	6 51'7	18 22'0	1.2
18	37°81	2°98	3 50'1	4 31'0	55 46'7	42 13'9	6 58'6	18 36'5	1.2
26	37°37	+3°14	-3 46'9	+ 4 48'9	56 18'4	42 13'9	+7 5'6	18 50'9	+1.2
Aug. 3	36°96	3°31	3 43'4	5 8'7	56 54'3	42 13'8	7 12'5	19 5'4	1.2
11	36°60	3°51	3 39'4	5 30'2	57 34'0	42 13'8	7 19'5	19 19'8	1.2
19	36°28	3°72	3 35'0	5 53'1	58 16'9	42 13'8	7 26'4	19 34'3	1.2
27	36°01	3°94	3 30'4	6 17'2	59 2'8	42 13'7	7 33'3	19 48'8	1.2
Sept. 4	35°78	+4°18	-3 25'4	+ 6 42'1	59 51'1	42 13'7	+7 40'2	20 3'2	+1.2
12	35°61	4°42	3 20'2	7 7'6	60 41'4	42 13'7	7 47'1	20 17'7	1.1
20	35°50	4°67	3 14'9	7 33'5	61 33'2	42 13'6	7 54'0	20 32'2	1.1
28	35°43	4°93	3 9'3	7 59'6	62 26'2	42 13'6	8 0'9	20 46'6	1.0
Oct. 6	35°42	5°19	3 3'7	8 25'5	63 19'7	42 13'6	8 7'7	21 1'1	1.0
14	35°46	+5°45	-2 58'0	+ 8 51'0	64 13'3	42 13'5	+8 14'6	21 15'5	+1.0
22	35°56	5°72	2 52'4	9 15'8	65 6'4	42 13'5	8 21'4	21 30'0	1.0
30	35°71	5°99	2 46'8	9 39'7	65 58'5	42 13'4	8 28'2	21 44'4	1.0
Nov. 7	35°91	6°26	2 41'3	10 2'5	66 49'2	42 13'4	8 35'0	21 58'9	1.0
15	36°16	6°53	2 36'0	10 23'9	67 37'8	42 13'4	8 41'8	22 13'4	1.0
23	36°47	+6°79	-2 31'0	+10 43'6	68 23'8	42 13'3	+8 48'6	22 27'8	+1.0
Dec. 1	36°82	7°04	2 26'3	11 1'5	69 6'5	42 13'3	8 55'4	22 42'3	1.0
9	37°22	7°29	2 22'0	11 17'3	69 45'4	42 13'2	9 2'1	22 56'8	1.0
17	37°67	7°52	2 18'1	11 30'9	70 20'0	42 13'2	9 8'9	23 11'2	1.0
25	38°15	7°74	2 14'8	11 42'0	70 49'8	42 13'2	9 15'6	23 25'7	1.0
33	38°66	+7°93	-2 12'1	+11 50'6	71 14'2	42 13'1	+9 22'3	23 40'2	+0.9



APPARENT ORBITS OF THE SATELLITES OF URANUS AT DATE OF OPPOSITION, SEPT. 4, 1922, AS SEEN IN AN INVERTING TELESCOPE.

APPARENT APSIDES.

Date.	Position Angle.	Apparent Distance.			
		Ariel.	Umbriel.	Titania.	Oberon.
May 27	345°·4	13"·1	18"·2	29"·9	40"·0
Sept. 4	345·6	13·9	19·3	31·7	42 4
Dec. 13	345·9	13·1	18·2	29·9	39·9

In the above diagram the central circle represents the planet.

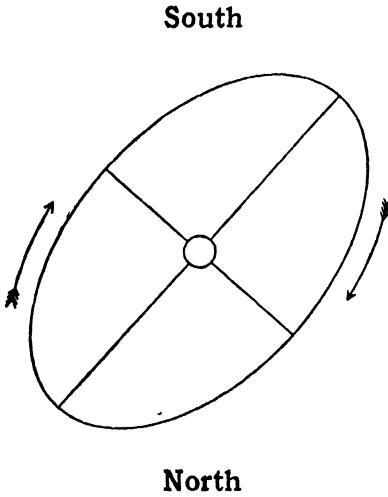
## 550 SATELLITES OF URANUS, 1922.

## GREENWICH MEAN TIME OF GREATEST ELONGATION.

ARIEL.		UMBRIEL.		TITANIA.		OBERON.
North.	South.	North.	South.	North.	South.	North and South.
d h	d h	d h	d h	d h	d h	d h
June 1 18.5	June 5 13.2	May 22 4.3	May 24 6.0	May 10 14.8	May 14 23.2	June 16 8.0 N.
9 7.9	13 2.7	30 11.2	June 1 12.9	19 7.7	23 16.1	23 1.6 S.
16 21.4	20 16.1	June 7 18.1	9 19.8	28 0.6	June 1 9.1	29 19.1 N.
24 10.8	28 5.6	16 1.0	18 2.7	June 5 17.5	10 2.0	July 6 12.7 S.
July 2 0.3	July 5 19.0	24 7.9	26 9.6	14 10.4	18 18.9	13 6.2 N.
9 13.8	13 8.5	July 2 14.8	July 4 16.6	23 3.4	27 11.8	19 23.8 S.
17 3.2	20 21.9	10 21.7	12 23.5	July 1 20.3	July 6 4.8	26 17.4 N.
24 16.7	28 11.4	19 4.6	21 6.4	10 13.2	14 21.7	Aug. 2 11.0 S.
Aug. 1 6.1	Aug. 5 0.9	27 11.6	29 13.3	19 6.2	23 14.6	9 4.6 N.
8 19.6	12 14.3	Aug. 4 18.5	Aug. 6 20.2	27 23.1	Aug. 1 7.6	15 22.1 S.
16 9.1	20 3.8	13 1.4	15 3.1	Aug. 5 16.1	10 0.5	22 15.7 N.
23 22.5	27 17.3	21 8.3	23 10.1	14 9.0	18 17.5	29 9.3 S.
31 12.0	Sept. 4 6.7	29 15.3	31 17.0	23 2.0	27 10.5	Sept. 5 2.9 N.
Sept. 8 1.5	11 20.2	Sept. 6 22.2	Sept. 8 23.9	31 18.9	Sept. 5 3.4	11 20.5 S.
15 15.0	19 9.7	15 5.1	17 6.9	Sept. 9 11.9	13 20.4	18 14.1 N.
23 4.4	26 23.2	23 12.1	25 13.8	18 4.9	22 13.4	25 7.7 S.
Oct. 30 17.9	Oct. 4 12.7	Oct. 1 19.0	Oct. 3 20.7	26 21.9	Oct. 1 6.3	Oct. 2 1.3 N.
8 7.4	12 2.1	10 1.9	12 3.7	Oct. 5 14.8	9 23.3	8 18.9 S.
15 20.9	19 15.6	18 8.9	20 10.6	14 7.8	18 16.3	15 12.5 N.
23 10.4	27 5.1	26 15.8	28 17.6	23 0.8	27 9.3	22 6.1 S.
30 23.8	Nov. 3 18.6	Nov. 3 22.8	Nov. 6 0.5	31 17.8	Nov. 5 2.2	28 23.7 N.
Nov. 7 13.3	11 8.1	12 5.7	14 7.4	Nov. 9 10.7	13 19.2	Nov. 4 17.2 S.
15 2.8	18 21.6	20 12.6	22 14.4	18 3.7	22 12.2	11 10.8 N.
22 16.3	26 11.0	28 19.6	30 21.3	26 20.6	Dec. 1 5.1	18 4.4 S.
30 5.8	Dec. 4 0.5	Dec. 7 2.5	Dec. 9 4.2	Dec 5 13.6	9 22.0	24 22.0 N.

For Ariel every third greatest elongation is given, and for Umbriel every alternate one; the intermediate ones may be found by adding multiples of the period of the satellite.

		d h
Sidereal period of Ariel	.. ..	2 12.489
Sidereal period of Umbriel	.. ..	4 3.460
Sidereal period of Titania	.. ..	8 16.941
Sidereal period of Oberon	.. ..	13 11.118



APPARENT ORBIT OF THE SATELLITE OF NEPTUNE AT DATE OF OPPOSITION, FEB. 3, 1922, AS SEEN IN AN INVERTING TELESCOPE.

Date.		Position Angle of Apsis.	Apparent Distance at Apsis.
Feb.	2	131°5	16.8
Apr.	23	130°1	16.3
Oct.	15	134°5	16.0
Dec.	32	134°3	16.7

GREENWICH MEAN TIME OF GREATEST ELONGATION.

Jan.	d h	Mar.	d h	May	d h	Sept.	d h	Nov.	d h
	3 12.0 E.		6 5.6 W.		6 23.0 E.		7 7.4 E.		5 1.2 E.
	6 10.5 W.		9 4.2 E.		9 21.5 W.		10 5.9 W.		7 23.7 W.
	9 9.0 E.		12 2.7 W.		12 20.0 E.		13 4.4 E.		10 22.2 E.
	12 7.6 W.		15 1.3 E.		15 18.5 W.		16 2.9 W.		13 20.7 W.
	15 6.1 E.		17 23.8 W.		18 17.0 E.		19 1.4 E.		16 19.2 E.
	18 4.7 W.		20 22.4 E.		21 15.5 W.		21 23.8 W.		19 17.7 W.
	21 3.2 E.		23 20.9 W.		24 14.0 E.		24 22.3 E.		22 16.3 E.
	24 1.8 W.		26 19.5 E.		27 12.5 W.		27 20.8 W.		25 14.8 W.
	27 0.3 E.		29 18.0 W.		30 11.0 E.		30 19.3 E.		28 13.3 E.
	29 22.9 W.	Apr.	1 16.6 E.	June	2 9.5 W.			Dec.	1 11.8 W.
Feb.	1 21.5 E.		4 15.1 W.		5 8.0 E.	Oct.	3 17.8 W.		4 10.3 E.
	4 20.0 W.		7 13.6 E.		8 6.5 W.		6 16.2 E.		7 8.9 W.
	7 18.6 E.		10 12.2 W.		11 5.0 E.		9 14.7 W.		10 7.4 E.
	10 17.1 W.		13 10.7 E.		14 3.5 W.		12 13.2 E.		13 5.9 W.
	13 15.7 E.		16 9.3 W.		17 2.0 E.		15 11.7 W.		16 4.5 E.
	16 14.2 W.		19 7.8 E.		20 0.5 W.		18 10.2 E.		19 3.0 W.
	19 12.8 E.		22 6.3 W.		22 23.0 E.		21 8.7 W.		22 1.5 E.
	22 11.4 W.		25 4.9 E.		25 21.5 W.		24 7.2 E.		25 0.1 W.
	25 9.9 E.		28 3.4 W.		28 20.0 E.		27 5.7 W.		27 22.6 E.
	28 8.5 W.	May	1 1.9 E.	July	1 18.5 W.		30 4.2 E.		30 21.1 W.
Mar.	3 7.0 E.		4 0.4 W.		4 17.0 E.	Nov.	2 2.7 W.		33 19.7 E.

In the above diagram the central circle represents the planet.  
The sidereal period of the satellite of Neptune is 5<sup>d</sup> 21<sup>h</sup> 0.44.

Jan.	d h m	Earth in Perihelion.	Apr.	d h m	$\Psi$ $\delta$ $\zeta$ - - $\Psi$ 4 37 N.
	2 19 19	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 55 S.		6 20 45	$\delta$ greatest Hel. Lat. S.
	3 5			7 13	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 19 N.
	8 11	$\text{H} \delta$ $\zeta$ - - $\Psi$ 4 28 N.		10 5 35	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 15 N.
	9 13	$\delta$ greatest Hel. Lat. S.		10 20 31	$\delta$ in $\Psi$
	14 16 33	$\text{H} \delta$ $\zeta$ - - $\Psi$ 4 28 N.		14 13	$\delta$ $\delta$ $\zeta$ - - $\delta$ 5 6 S.
	17 22	$\text{H} \delta$ Stationary.		15 16 49	
	18 6 9	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 2 56 N.		22 8 21	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 14 S.
	18 23 32	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 0 49 N.		22 15	$\delta$ in $\Omega$
	20 20 50	$\delta$ $\delta$ $\zeta$ - - $\delta$ 1 34 S.		24 1	$\Psi$ Stationary.
	27 8 15	$\delta$ $\delta$ $\zeta$ - - $\delta$ 5 46 S.		24 6	$\delta$ Sup. $\delta$ $\odot$
	28 14	$\delta$ in $\Omega$		26 13	$\delta$ in $\Omega$
	29 6 51	$\delta$ $\delta$ $\zeta$ - - $\delta$ 3 25 S.		26 21 42	$\delta$ $\delta$ $\zeta$ - - $\delta$ 2 49 N.
	29 11	$\delta$ at greatest elong. 18 22 E.		28 7 22	$\delta$ $\delta$ $\zeta$ - - $\delta$ 4 13 N.
Feb.	30 4 30	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 38 S.	May	1 4	$\delta$ in Perihelion.
	2 4	$\delta$ in Perihelion.		3 23	$\Psi$ $\odot$
	2 21	$\delta$ in Aphelion.		4 3 1	$\Psi$ $\delta$ $\zeta$ - - $\Psi$ 4 31 N.
	3 1	$\text{H} \delta$ Stationary.		7 11 53	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 21 N.
	3 8	$\text{H} \delta$ greatest Hel. Lat. N.		7 15	$\delta$ Stationary.
	3 16	$\Psi$ $\delta$ $\odot$		8 1 8	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 1 26 N.
	4 10	$\delta$ Stationary.		11 11	$\delta$ greatest Hel. Lat. N.
	8 19	$\delta$ Sup. $\delta$ $\odot$		13 7 7	$\delta$ $\delta$ $\zeta$ - - $\delta$ 6 18 S.
	11 2 30	$\Psi$ $\delta$ $\zeta$ - - $\Psi$ 4 28 N.		19 17 35	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 1 S.
	12 11	$\delta$ greatest Hel. Lat. N.		23 7	$\delta$ at greatest elong. 22 37 E.
	13 22	$\delta$ Inf. $\delta$ $\odot$		26 7	$\delta$ in Perihelion.
	14 13 38	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 2 55 N.		28 0 2	$\delta$ $\delta$ $\zeta$ - - $\delta$ 6 29 N.
	15 7 36	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 0 42 N.		28 10 39	$\delta$ $\delta$ $\zeta$ - - $\delta$ 6 30 N.
	18 6 28	$\delta$ $\delta$ $\zeta$ - - $\delta$ 2 59 S.		31 8 53	$\Psi$ $\delta$ $\zeta$ - - $\Psi$ 4 19 N.
	19 16	$\delta$ $\delta$ $\zeta$ - - $\delta$ 0 46 S.	June	3 17 14	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 8 N.
	24 4 49	$\delta$ $\delta$ $\zeta$ - - $\delta$ 0 46 S.		3 21	$\delta$ in $\Psi$
	24 13 2	$\delta$ $\delta$ $\zeta$ - - $\delta$ 1 46 S.		4 0	$\text{H} \delta$ Stationary.
	25 8	$\delta$ greatest Hel. Lat. S.		4 5 48	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 1 16 N.
	26 0	$\delta$ Stationary.		4 11	$\text{H} \delta$ $\odot$
	26 13 40	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 27 S.		5 10	$\delta$ Stationary.
	26 19 55	$\delta$ $\delta$ $\zeta$ - - $\delta$ 3 57 S.		6 8	$\text{H} \delta$ Stationary.
Mar.	28 11	$\text{H} \delta$ $\odot$		9 4 54	$\delta$ $\delta$ $\zeta$ - - $\delta$ 7 44 S.
	7 22	$\delta$ in $\Psi$		10 2	$\delta$ $\delta$ $\odot$
	10 12 30	$\Psi$ $\delta$ $\zeta$ - - $\Psi$ 4 34 N.		14 3	$\delta$ in Aphelion.
	12 7	$\delta$ at greatest elong. 27 32 W.		16 2 3	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 2 46 S.
	13 21 51	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 6 N.		17 3	$\delta$ greatest Hel. Lat. N.
	14 14 43	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 0 54 N.		17 21	$\delta$ Inf. $\delta$ $\odot$
	18 4	$\delta$ in Aphelion.		18 16	$\text{H} \delta$ Stationary.
	18 14 25	$\delta$ $\delta$ $\zeta$ - - $\delta$ 4 7 S.		21 17 27	$\odot$ enters Sign $\alpha$ , Solstice.
	20 21 49	$\odot$ enters Sign $\gamma$ , Equinox.		22 22	$\text{H} \delta$ $\odot$
	25 5	$\text{H} \delta$ $\odot$		23 23 38	$\delta$ $\delta$ $\zeta$ - - $\delta$ 0 23 N.
	25 14 21	$\delta$ $\delta$ $\zeta$ - - $\delta$ 1 34 S.		27 9 32	$\delta$ $\delta$ $\zeta$ - - $\delta$ 6 3 N.
	25 22 57	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 3 21 S.		27 16 17	$\Psi$ $\delta$ $\zeta$ - - $\Psi$ 4 5 N.
	26 0 5	$\delta$ $\delta$ $\zeta$ - - $\delta$ 4 54 S.		29 13	$\delta$ Stationary.
	28 1 12	$\odot$ eclipsed, vis. at Greenh.		30 20 23	$\delta$ $\delta$ $\Psi$ - - $\delta$ 1 45 N.
	29 2 54	$\delta$ $\delta$ $\zeta$ - - $\delta$ 0 7 N.		30 23 24	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 2 43 N.
Apr.	4 2	$\text{H} \delta$ $\odot$	July	1 12 32	$\text{H} \delta$ $\zeta$ - - $\text{H} \delta$ 0 48 N.
	4 8	$\text{H} \delta$ in Aphelion.			

July			Oct.		
d	h	m	d	h	m
2	5		8	0	
2	10		9	18	
4	12		13	7	
5	22	11	14	23	
10	18		15	12	39
13	9	9	19	4	18
16	15		19	9	5
22	21	47	19	12	
23	12		20	4	26
25	2	8	20	19	
27	1	21	22	16	43
28	3		23	0	
28	8	17	23	9	
28	23	0	24	2	
Aug. 2	5	55	26	16	53
6	18		30	4	4
7	8	31	30	14	
7	10		Nov. 3	9	
8	14		4	9	
9	14	41	10	9	45
12	4		10	20	
15	6	37	11	20	5
21	13	59	15	19	12
23	12	16	17	0	28
24	20	43	17	16	10
25	12	3	19	1	30
25	13	46	19	14	
26	18	0	20	22	
30	6	57	24	17	7
30	21		24	18	
Sept. 4	11		26	10	57
5	19	1	26	20	
10	3		27	13	54
15	11		Dec. 2	5	
15	14		3	7	
18	2	11	6	7	
18	10		7	2	
19	23		9	1	13
20	16	47	13	6	45
21	12	0	14	4	
22	8	7	14	18	5
22	9	30	15	18	34
23	8	10	18	13	31
23	19	40	22	2	57
27	20	14	23	18	26
30	11		23	19	57
Oct. 2	19		24	21	24
2	23	4	27	10	
4	5		30	13	

$\gamma \square \odot$   
 Earth in Aphelion.  
 $\delta$  greatest Hel. Lat. S.  
 $\delta \odot \llcorner - - \delta 8 39$  S.  
 $\delta$  at greatest elong. 20 58 W.  
 $\text{H} \odot \llcorner - - \text{H} 2 34$  S.  
 $\delta$  Stationary.  
 $\delta \odot \llcorner - - \delta 4 51$  N.  
 $\delta$  in  $\Omega$   
 $\Psi \odot \llcorner - - \Psi 3 55$  N.  
 $\delta \odot \llcorner - - \delta 2 36$  N.  
 $\delta$  in Perihelion.  
 $\text{h} \odot \llcorner - - \text{h} 2 13$  N.  
 $\gamma \odot \llcorner - - \gamma 0 11$  N.  
 $\delta \odot \llcorner - - \delta 8 52$  S.  
 $\delta$  Sup.  $\odot \odot$   
 $\delta \odot \Psi - - \delta 1 40$  N.  
 $\delta$  greatest Hel. Lat. N.  
 $\Psi \odot \odot$   
 $\text{H} \odot \llcorner - - \text{H} 2 30$  S.  
 $\delta$  in  $\Psi$   
 $\delta \odot \text{h} - - \delta 2 42$  S.  
 $\Psi \odot \llcorner - - \Psi 3 52$  N.  
 $\delta \odot \llcorner - - \delta 2 18$  N.  
 $\text{h} \odot \llcorner - - \text{h} 1 46$  N.  
 $\delta \odot \llcorner - - \delta 2 44$  S.  
 $\gamma \odot \llcorner - - \gamma 0 27$  S.  
 $\delta \odot \gamma - - \delta 2 29$  S.  
 $\delta \odot \llcorner - - \delta 8 44$  S.  
 $\delta$  in  $\Psi$   
 $\text{H} \delta \odot$   
 $\text{H} \odot \llcorner - - \text{H} 2 34$  S.  
 $\delta$  in Aphelion.  
 $\delta$  at greatest elong. 46 24 E.  
 $\delta$  in Aphelion.  
 $\Psi \odot \llcorner - - \Psi 3 51$  N.  
 $\delta$  greatest Hel. Lat. S.  
 $\delta$  at greatest elong. 26 26 E.  
 $\odot$  eclipsed, invis. at Greenh.  
 $\text{h} \odot \llcorner - - \text{h} 1 24$  N.  
 $\gamma \odot \llcorner - - \gamma 1 2$  S.  
 $\delta \odot \llcorner - - \delta 5 29$  S.  
 $\odot$  enters Sign  $\approx$ , Equinox  
 $\delta \odot \llcorner - - \delta 7 48$  S.  
 $\delta \odot \llcorner - - \delta 8 8$  S.  
 $\delta$  greatest Hel. Lat. S.  
 $\delta$  Stationary.  
 $\text{H} \odot \llcorner - - \text{H} 2 40$  S.  
 $\text{h} \odot \odot$

$\delta$  greatest Hel. Lat. S.  
 $\delta \square \odot$   
 $\delta$  in Perihelion.  
 $\delta$  Inf.  $\odot \odot$   
 $\Psi \odot \llcorner - - \Psi 3 47$  N.  
 $\text{h} \odot \llcorner - - \text{h} 1 5$  N.  
 $\delta \odot \llcorner - - \delta 1 38$  S.  
 $\delta$  in  $\Omega$   
 $\gamma \odot \llcorner - - \gamma 1 34$  S.  
 $\delta$  at greatest brilliancy.  
 $\delta \odot \llcorner - - \delta 10 37$  S.  
 $\gamma \odot \odot$   
 $\delta$  Stationary.  
 $\delta$  in Perihelion.  
 $\delta \odot \llcorner - - \delta 6 53$  S.  
 $\text{H} \odot \llcorner - - \text{H} 2 39$  S.  
 $\delta$  at greatest elong. 18 38 W.  
 $\delta$  greatest Hel. Lat. N.  
 $\delta$  Stationary.  
 $\delta \odot \gamma - - \delta 0 47$  N.  
 $\Psi \square \odot$   
 $\Psi \odot \llcorner - - \Psi 3 36$  N.  
 $\text{h} \odot \llcorner - - \text{h} 0 47$  N.  
 $\gamma \odot \llcorner - - \gamma 2 3$  S.  
 $\delta \odot \llcorner - - \delta 2 42$  S.  
 $\delta \odot \llcorner - - \delta 8 18$  S.  
 $\text{H}$  Stationary.  
 $\Psi$  Stationary.  
 $\delta \odot \llcorner - - \delta 4 53$  S.  
 $\delta$  Inf.  $\odot \odot$   
 $\text{H} \odot \llcorner - - \text{H} 2 26$  S.  
 $\delta$  in  $\Psi$   
 $\delta \odot \gamma - - \delta 1 26$  N.  
 $\text{H} \square \odot$   
 $\delta$  in  $\Omega$   
 $\delta$  Sup.  $\odot \odot$   
 $\delta$  in Aphelion.  
 $\Psi \odot \llcorner - - \Psi 3 21$  N.  
 $\text{h} \odot \llcorner - - \text{h} 0 27$  N.  
 $\delta$  Stationary.  
 $\gamma \odot \llcorner - - \gamma 2 33$  S.  
 $\delta \odot \llcorner - - \delta 1 44$  S.  
 $\delta \odot \llcorner - - \delta 6 54$  S.  
 $\odot$  enters Sign  $\approx$ , Solstice.  
 $\delta \odot \llcorner - - \delta 2 17$  S.  
 $\text{H} \odot \llcorner - - \text{H} 2 5$  S.  
 $\delta \odot \text{H} - - \delta 0 7$  S.  
 $\delta$  greatest Hel. Lat. S.  
 $\delta$  at greatest brilliancy.

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE SUN.

Noon.	<i>P</i>	<i>B</i> <sub>0</sub>	<i>L</i> <sub>0</sub>	•	Noon.	<i>P</i>	<i>B</i> <sub>0</sub>	<i>L</i> <sub>0</sub>
Jan. 1	+ 2°10	— 3°13	181°78		July 5	— 0°98	+ 3°39	259°99
6	— 0°34	3°70	115°93		10	+ 1°29	3°91	193°81
11	2°75	4°24	50°08		15	3°54	4°41	127°65
16	5°12	4°74	344°24		20	5°75	4°87	61°49
21	7°43	5°21	278°41		25	7°90	5°30	355°34
26	— 9°66	— 5°64	212°58		30	+ 9°98	+ 5°70	289°20
31	11°79	6°02	146°75		Aug. 4	11°97	6°05	223°08
Feb. 5	13°81	6°35	80°91		9	13°87	6°36	156°97
10	15°70	6°64	15°08		14	15°66	6°63	90°87
15	17°46	6°87	309°24		19	17°34	6°85	24°78
20	— 19°08	— 7°05	243°39		24	+ 18°90	+ 7°03	318°71
25	20°55	7°17	177°54		29	20°33	7°15	252°65
Mar. 2	21°86	7°24	111°68		Sept. 3	21°63	7°23	186°60
7	23°02	7°25	45°81		8	22°78	7°25	120°57
12	24°02	7°20	339°92		13	23°79	7°22	54°55
17	— 24°85	— 7°10	274°01		18	+ 24°64	+ 7°14	348°54
22	25°50	6°95	208°09		23	25°33	7°00	282°55
27	25°98	6°75	142°16		28	25°86	6°82	216°56
Apr. 1	26°29	6°50	76°20		Oct. 3	26°22	6°58	150°58
6	26°42	6°20	10°23		8	26°40	6°29	84°62
11	— 26°36	— 5°85	304°23		13	+ 26°39	+ 5°96	18°66
16	26°12	5°46	238°21		18	26°20	5°58	312°70
21	25°69	5°04	172°17		23	25°82	5°15	246°76
26	25°08	4°58	106°11		28	25°25	4°69	180°82
May 1	24°29	4°08	40°04		Nov. 2	24°48	4°19	114°89
6	— 23°32	— 3°56	333°95		7	+ 23°51	+ 3°66	48°97
11	22°17	3°02	267°84		12	22°34	3°10	343°05
16	20°85	2°46	201°71		17	20°98	2°51	277°14
21	19°37	1°88	135°57		22	19°44	1°90	211°23
26	17°74	1°29	69°41		27	17°72	1°28	145°33
31	— 15°96	— 0°69	3°25		Dec. 2	+ 15°84	+ 0°65	79°44
June 5	14°06	— 0°08	297°08		7	13°81	+ 0°01	13°55
10	12°05	+ 0°52	230°90		12	11°66	— 0°63	307°66
15	9°94	1°12	164°72		17	9°40	1°27	241°79
20	7°76	1°71	98°53		22	7°05	1°90	175°93
25	— 5°53	+ 2°29	32°35		27	+ 4°65	— 2°51	110°07
30	— 3°26	+ 2°85	326°17		32	+ 2°22	— 3°10	44°21



## MEAN EQUATOR, ORBIT, AND MEAN LONGITUDE.

Noon.	Mean Equator.			Orbit.		Mean Longitude. (	Mean Solar Days.	Motion in Mean Longitude.
	<i>i</i>	$\Delta$	$\Omega'$	$\Gamma'$	$\Omega$			
Jan. 0	24 56.4	12 54.6	+0 51.7	149 27.5	193 41.7	302 47.8	0.1	1 19.06
10	24 56.6	12 24.6	0 49.7	150 34.3	193 10.0	74 33.6	0.2	2 38.12
20	24 56.8	11 54.7	0 47.8	151 41.2	192 38.2	206 19.4	0.3	3 57.18
30	24 57.0	11 24.7	0 45.8	152 48.0	192 6.4	338 5.3	0.4	5 16.23
Feb. 9	24 57.2	10 54.7	0 43.8	153 54.8	191 34.6	109 51.1	0.5	6 35.29
							0.6	7 54.35
19	24 57.3	10 24.8	+0 41.8	155 1.7	191 2.9	241 37.0	0.7	9 13.41
Mar. 1	24 57.5	9 54.8	0 39.8	156 8.5	190 31.1	13 22.8	0.8	10 32.47
11	24 57.6	9 24.8	0 37.8	157 15.4	189 59.3	145 8.6	0.9	11 51.53
21	24 57.7	8 54.9	0 35.9	158 22.2	189 27.5	276 54.5	1.0	13 10.58
31	24 57.9	8 24.9	0 33.9	159 29.0	188 55.8	48 40.3	2.0	26 21.17
							3.0	39 31.75
Apr. 10	24 58.0	7 55.0	+0 31.9	160 35.9	188 24.0	180 26.2	4.0	52 42.33
20	24 58.1	7 25.0	0 29.9	161 42.7	187 52.2	312 12.0	5.0	65 52.92
30	24 58.2	6 55.0	0 27.9	162 49.6	187 20.5	83 57.8	6.0	79 3.50
May 10	24 58.3	6 25.1	0 25.9	163 56.4	186 48.7	215 43.7	7.0	92 14.09
20	24 58.4	5 55.2	0 23.9	165 3.3	186 16.9	347 29.5	8.0	105 24.67
							9.0	118 35.25
30	24 58.5	5 25.2	+0 21.9	166 10.1	185 45.1	119 15.3	10.0	131 45.84
June 9	24 58.5	4 55.3	0 19.8	167 17.0	185 13.4	251 1.2		
19	24 58.6	4 25.3	0 17.8	168 23.8	184 41.6	22 47.0		
29	24 58.7	3 55.4	0 15.8	169 30.6	184 9.8	154 32.9	Hrs.	
July 9	24 58.7	3 25.5	0 13.8	170 37.5	183 38.0	286 18.7	1	0 32.94
							2	1 5.88
19	24 58.8	2 55.5	+0 11.8	171 44.3	183 6.3	58 4.5	3	1 38.82
29	24 58.8	2 25.6	0 9.8	172 51.2	182 34.5	189 50.4	4	2 11.76
Aug. 8	24 58.8	1 55.7	0 7.8	173 58.0	182 2.7	321 36.2	5	2 44.70
18	24 58.9	1 25.7	0 5.8	175 4.8	181 31.0	93 22.0	6	3 17.65
28	24 58.9	0 55.8	0 3.8	176 11.7	180 59.2	225 7.9	7	3 50.59
							8	4 23.53
Sept. 7	24 58.9	0 25.8	+0 1.7	177 18.5	180 27.4	356 53.7	9	4 56.47
17	24 58.9	359 55.9	-0 0.3	178 25.4	179 55.6	128 39.6	10	5 29.41
27	24 58.9	359 25.9	0 2.3	179 32.2	179 23.9	260 25.4	11	6 2.35
Oct. 7	24 58.9	358 56.0	0 4.3	180 39.1	178 52.1	32 11.2	12	6 35.29
17	24 58.9	358 26.1	0 6.3	181 45.9	178 20.3	163 57.1	13	7 8.23
							14	7 41.17
27	24 58.8	357 56.1	-0 8.3	182 52.7	177 48.5	295 42.9	15	8 14.11
Nov. 6	24 58.8	357 26.2	0 10.4	183 59.6	177 16.8	67 28.7	16	8 47.06
16	24 58.8	356 56.2	0 12.4	185 6.4	176 45.0	199 14.6	17	9 20.00
26	24 58.7	356 26.3	0 14.4	186 13.3	176 13.2	331 0.4	18	9 52.94
Dec. 6	24 58.6	355 56.4	0 16.4	187 20.1	175 41.5	102 46.3	19	10 25.88
							20	10 58.82
16	24 58.6	355 26.4	-0 18.4	188 26.9	175 9.7	234 32.1	21	11 31.76
26	24 58.5	354 56.5	0 20.4	189 33.8	174 37.9	6 17.9	22	12 4.70
36	24 58.4	354 26.6	-0 22.4	190 40.6	174 6.1	138 3.8	23	12 37.64

Daily motion of  $\Gamma'$  . . . . . +6''.684  
 Daily motion of  $\Omega$  . . . . . -3''.177

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

Mid-night.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		0	Illuminated Limbs at Transit at Greenwich, with Corrections to Defective Limbs when Observable.			
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		R.A.	s	Dec.	"
Jan.	1	+0°25	—5°10	+0°01	—0°03	311°84	+1°55	340°24			
	2	—1°10	4°14	+0°01	0°03	324°01	1°55	337°57	I.	S.	
	3	2°50	3°01	0°00	0°03	336°19	1°55	335°84	I.	S.	
	4	3°88	1°74	0°00	0°03	348°36	1°55	335°08	I.	S.	
	5	5°15	—0°38	0°00	0°03	0°52	1°54	335°33	I.	S.	
	6	—6°20	+1°02	0°00	—0°03	12°67	+1°54	336°65	I.	S.	
	7	6°95	2°40	0°00	0°02	24°82	1°54	339°08	I.	S.	
	8	7°30	3°70	0°00	0°02	36°97	1°53	342°64	I.	S.	
	9	7°18	4°85	0°00	0°02	49°10	1°53	347°29	I.	S.	
	10	6°56	5°75	0°00	0°02	61°23	1°52	352°89	I.	S.	
	11	—5°44	+6°34	0°00	—0°02	73°36	+1°51	359°16	I.	S.	
	12	3°92	6°52	0°00	0°02	85°48	1°50	5°63	I.	S.	
	13	2°11	6°27	0°00	0°02	97°61	1°50	11°79	II.	S.	
	14	—0°19	5°58	0°00	0°02	109°73	1°49	17°10	II.	S.	
	15	+1°67	4°51	0°00	0°02	121°86	1°48	21°18	II.	S.	
	16	+3°31	+3°14	0°00	—0°02	133°99	+1°47	23°81	II.	S.	
	17	4°65	+1°58	0°00	0°02	146°13	1°46	24°90	II.	S.	
	18	5°63	—0°04	0°00	0°02	158°27	1°45	24°49	II.	S.	
	19	6°24	1°62	0°00	0°02	170°42	1°44	22°69	II.	S.	
	20	6°52	3°07	0°00	0°03	182°58	1°44	19°67	II.	S.	
	21	+6°51	—4°33	0°00	—0°03	194°75	+1°43	15°64	II.	S.	
	22	6°26	5°34	0°00	0°03	206°92	1°43	10°82	II.	S.	
	23	5°79	6°06	0°00	0°03	219°10	1°43	5°49			
	24	5°14	6°48	0°00	0°03	231°28	1°42	359°96			
	25	4°34	6°60	0°00	0°03	243°46	1°42	354°51			
	26	+3°39	—6°41	0°00	—0°03	255°65	+1°41	349°42			
	27	2°30	5°93	0°00	0°03	267°84	1°41	344°91			
	28	+1°09	5°20	0°00	0°03	280°04	1°40	341°13			
	29	—0°23	4°25	0°00	0°03	292°23	1°39	338°21			
	30	1°62	3°11	0°00	0°03	304°41	1°38	336°21			
	31	—3°03	—1°85	0°00	—0°03	316°60	+1°36	335°18			
Feb.	1	4°41	—0°50	0°00	0°03	328°78	1°35	335°15	I.	S.	
	2	5°69	+0°89	—0°01	0°03	340°96	1°33	336°15	I.	S.	
	3	6°77	2°26	0°01	0°03	353°13	1°32	338°20	I.	S.	
	4	7°57	3°56	0°01	0°02	5°29	1°30	341°31	I.	S.	
	5	—8°01	+4°71	—0°01	—0°02	17°45	+1°28	345°46	I.	S.	
	6	7°99	5°66	0°01	0°02	29°60	1°26	350°56	I.	S.	
	7	7°47	6°32	0°01	0°02	41°75	1°24	356°42	I.	S.	
	8	6°44	6°62	0°01	0°02	53°89	1°22	2°72	I.	S.	0°93
	9	4°93	6°51	0°01	0°02	66°03	1°19	9°01	I.	S.	0°07
	10	—3°07	+5°95	—0°01	—0°02	78°16	+1°17	14°77	I.	S.	0°23
	11	—0°99	4°97	0°01	0°02	90°29	1°14	19°51	I.	S.	
	12	+1°11	3°62	0°01	0°02	102°42	1°12	22°88	II.	S.	0°04
	13	3°06	2°03	—0°01	0°02	114°55	1°09	24°66	II.	S.	
	14	4°71	+0°32	0°00	0°02	126°69	1°07	24°80	II.	S.	
	15	+5°99	—1°38	0°00	—0°02	138°83	+1°04	23°40	II.	S.	
	16	+6°84	—2°94	0°00	—0°02	150°98	+1°02	20°64	II.	S.	

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

Mid-night.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C	Illuminated Limbs at Transit at Greenwich, with Corrections to Defective Limbs when Observable.			
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		R.A.	s	Dec.	
Feb. 16	+6°84	—2°94	0°00	—0°02	150°98	+1°02	20°64	II.		S.	"
17	7°28	4°28	0°00	0°02	163°14	1°00	16°75	II.		S.	
18	7°33	5°36	0°00	0°02	175°31	0°98	12°02	II.		S.	
19	7°04	6°14	0°00	0°02	187°48	0°97	6°74	II.		S.	
20	6°46	6°60	0°00	0°02	199°66	0°95	1°22	II.		S.	
21	+5°66	—6°74	0°00	—0°02	211°84	+0°94	355°74	II.		N.	
22	4°67	6°58	0°00	0°02	224°03	0°92	350°58				
23	3°53	6°13	0°00	0°02	236°22	0°91	345°94				
24	2°28	5°41	—0°01	0°02	248°42	0°89	341°98				
25	+0°96	4°47	0°01	0°02	260°62	0°87	338°84				
26	—0°42	—3°34	—0°01	—0°02	272°82	+0°86	336°61				
27	1°81	2°06	0°01	0°02	285°03	0°84	335°33				
28	3°18	—0°69	0°01	0°02	297°23	0°82	335°05				
Mar. 1	4°48	+0°72	0°01	0°02	309°43	0°79	335°80				
2	5°66	2°11	0°01	0°02	321°62	0°77	337°59				
3	—6°67	+3°43	—0°01	—0°02	333°81	+0°75	340°41	I.		S.	
4	7°42	4°61	0°01	0°02	346°00	0°72	344°22	I.		S.	
5	7°85	5°59	0°01	0°02	358°18	0°70	348°94	I.		S.	
6	7°91	6°31	0°01	0°02	10°36	0°67	354°42	I.		S.	
7	7°53	6°71	0°01	0°02	22°53	0°64	0°40	I.		S.	0°40
8	—6°71	+6°73	—0°01	—0°02	34°69	+0°61	6°52	I.		N.	0°84
9	5°44	6°33	0°01	0°02	46°85	0°57	12°38	I.		N.	
10	3°81	5°51	0°01	0°02	59°00	0°54	17°51	I.		N.	
11	—1°91	4°29	0°01	0°02	71°15	0°50	21°49	I.		N.	
12	+0°11	2°76	0°01	0°02	83°29	0°47	24°03	I.		S.	0°00
13	+2°09	+1°03	—0°01	—0°02	95°44	+0°43	24°94	II.		S.	
14	3°89	—0°76	0°01	0°02	107°59	0°40	24°20	II.		S.	
15	5°37	2°46	0°01	0°02	119°74	0°36	21°91	II.		S.	
16	6°45	3°96	0°01	0°02	131°89	0°33	18°30	II.		S.	
17	7°11	5°18	0°01	0°02	144°06	0°30	13°67	II.		S.	
18	+7°33	—6°07	—0°01	—0°02	156°22	+0°28	8°37	II.		S.	
19	7°15	6°63	0°01	0°02	168°40	0°25	2°75	II.		S.	0°12
20	6°62	6°84	0°01	0°02	180°58	0°23	357°15	II.		N.	
21	5°79	6°73	0°01	0°02	192°77	0°21	351°83	II.		N.	
22	4°73	6°33	0°01	0°02	204°97	0°19	347°02	II.		N.	
23	+3°50	—5°66	—0°01	—0°02	217°17	+0°17	342°89				
24	2°16	4°75	0°01	0°02	229°38	0°15	339°54				
25	+0°77	3°64	0°01	0°02	241°59	0°13	337°07				
26	—0°62	2°37	0°01	0°02	253°80	0°11	335°55				
27	1°96	—1°00	0°01	0°02	266°02	0°09	335°02				
28	—3°22	+0°42	—0°01	—0°02	278°24	+0°06	335°52				
29	4°36	1°84	0°02	0°02	290°46	0°04	337°07				
30	5°34	3°20	0°02	0°02	302°67	+0°02	339°67				
31	6°12	4°42	0°02	0°02	314°89	—0°01	343°27				
Apr. 1	6°67	5°45	0°02	0°02	327°10	0°03	347°78	I.		S.	
2	—6°95	+6°22	—0°02	—0°02	339°30	—0°06	353°04	I.		S.	
3	—6°94	+6°69	—0°02	—0°02	351°50	—0°09	358°81	I.		S.	

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

Mid-night.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C	Illuminated Limbs at Transit at Greenwich, with Corrections to Defective Limbs when Observable.			
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		R.A.	S	Dec.	
Apr. 1	—6°67	+5°45	—0°02	—0°02	327°10	—0°03	347°78	I.		S.	"
2	6°95	6°22	0°02	0°02	339°30	0°06	353°04	I.		S.	
3	6°94	6°69	0°02	0°02	351°50	0°09	358°81	I.		S.	
4	6°60	6°80	0°02	0°02	3°70	0°12	4°78	I.		N.	
5	5°92	6°53	0°02	0°02	15°89	0°15	10°58	I.		N.	
6	—4°92	+5°86	—0°02	—0°02	28°07	—0°19	15°81	I.		N.	
7	3°63	4°81	0°01	0°02	40°25	0°22	20°11	I.		N.	
8	2°10	3°42	0°01	0°02	52°42	0°26	23°17	I.		N.	
9	—0°42	1°79	0°01	0°02	64°58	0°29	24°75	I.		N.	
10	+1°30	+0°02	0°01	0°02	76°75	0°33	24°74	I.		N.	
11	+2°93	—1°73	—0°01	—0°02	88°91	—0°37	23°13	II.	0°06	S.	0°02
12	4°37	3°35	0°01	0°02	101°07	0°40	20°04	II.		S.	
13	5°51	4°72	0°01	0°02	113°24	0°44	15°71	II.		S.	
14	6°28	5°77	0°01	0°02	125°41	0°47	10°50	II.		S.	
15	6°63	6°46	0°01	0°02	137°58	0°50	4°80	II.		S.	0°05
16	+6°57	—6°79	—0°01	—0°02	149°77	—0°52	359°00	II.		N.	
17	6°12	6°78	0°01	0°02	161°95	0°54	353°44	II.		N.	
18	5°34	6°44	0°01	0°02	174°15	0°57	348°37	II.		N.	
19	4°29	5°83	0°01	0°02	186°35	0°59	343°97	II.		N.	
20	3°04	4°98	0°01	0°02	198°56	0°60	340°38	II.		N.	
21	+1°68	—3°92	—0°01	—0°02	210°78	—0°62	337°66	II.		N.	
22	+0°28	2°69	0°01	0°02	223°00	0°64	335°87				
23	—1°09	—1°35	0°01	0°02	235°22	0°66	335°06				
24	2°35	+0°06	0°01	0°02	247°45	0°67	335°27				
25	3°47	1°49	0°01	0°02	259°68	0°69	336°54				
26	—4°39	+2°86	—0°01	—0°02	271°91	—0°71	338°88				
27	5°08	4°12	0°01	0°02	284°15	0°73	342°27				
28	5°54	5°20	0°02	0°02	296°38	0°75	346°63				
29	5°75	6°02	0°02	0°02	308°61	0°77	351°79				
30	5°72	6°55	0°02	0°02	320°84	0°79	357°51				
May 1	—5°45	+6°73	—0°02	—0°02	333°07	—0°81	3°47	I.		N.	
2	4°97	6°53	0°01	0°02	345°29	0°83	9°29	I.		N.	
3	4°29	5°96	0°01	0°02	357°50	0°86	14°60	I.		N.	
4	3°43	5°02	0°01	0°02	9°70	0°88	19°06	I.		N.	
5	2°40	3°76	0°01	0°02	21°90	0°91	22°40	I.		N.	
6	—1°24	+2°25	—0°01	—0°02	34°10	—0°94	24°40	I.		N.	
7	+0°02	+0°59	0°01	0°02	46°29	0°97	24°94	I.		N.	
8	1°32	—1°11	0°01	0°02	58°47	1°00	23°95	I.		N.	
9	2°59	2°74	0°01	0°02	70°65	1°03	21°47	I.		N.	
10	3°75	4°17	—0°01	0°02	82°83	1°06	17°65	I.	0°06	N.	1°22
11	+4°70	—5°33	0°00	—0°02	95°01	—1°09	12°75	II.		N.	0°08
12	5°36	6°15	0°00	0°02	107°19	1°12	7°15	II.		N.	0°09
13	5°68	6°60	0°00	0°02	119°37	1°14	1°25	II.		N.	1°22
14	5°63	6°69	0°00	0°02	131°56	1°16	355°44	II.		N.	
15	5°21	6°44	0°00	0°02	143°75	1°18	350°06	II.		N.	
16	+4°45	—5°90	0°00	—0°02	155°95	—1°19	345°33	II.		N.	
17	+3°41	—5°10	—0°01	—0°02	168°15	—1°21	341°41	II.		N.	

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

Mid- night.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C	Illuminated Limbs at Transit at Greenwich, with Corrections to Defective Limbs when Observable.				
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		R.A.	s	Dec.	"	
May	17	+3°41	—5°10	—0°01	—0°02	168°15	—1°21	341°41	II.		N.	
	18	2°17	4°09	0°01	0°02	180°37	1°22	338°39	II.		N.	
	19	+0°81	2°91	0°01	0°02	192°58	1°23	336°30	II.		N.	
	20	—0°58	1°61	0°01	0°02	204°81	1°24	335°19	II.		N.	
	21	1°91	—0°24	0°01	0°01	217°04	1°25	335°09	II.		N.	
	22	—3°09	+1°16	—0°01	—0°01	229°27	—1°26	336°03				
	23	4°07	2°53	0°01	0°01	241°51	1°26	338°04				
	24	4°77	3°80	0°01	0°01	253°76	1°27	341°12				
	25	5°18	4°91	0°01	0°01	266°00	1°28	345°24				
	26	5°28	5°78	0°01	0°01	278°25	1°29	350°26				
	27	—5°08	+6°36	—0°01	—0°01	290°49	—1°30	355°95				
	28	4°64	6°59	0°01	0°01	302°74	1°31	1°99				
	29	3°99	6°45	0°01	0°01	314°98	1°32	7°98				
	30	3°21	5°93	0°01	0°01	327°22	1°34	13°50	I.		N.	
	31	2°34	5°04	0°01	0°01	339°45	1°35	18°19	I.		N.	
June	1	—1°43	+3°85	—0°01	—0°01	351°68	—1°36	21°78	I.		N.	
	2	—0°49	2°41	—0°01	0°01	3°90	1°38	24°07	I.		N.	
	3	+0°45	+0°83	0°00	0°01	16°11	1°39	24°95	I.		N.	
	4	1°38	—0°80	0°00	0°01	28°31	1°41	24°38	I.		N.	
	5	2°28	2°38	0°00	0°01	40°51	1°43	22°38	I.		N.	
	6	+3°13	—3°81	0°00	—0°01	52°71	—1°45	19°05	I.		N.	
	7	3°89	5°00	0°00	0°01	64°90	1°46	14°59	I.		N.	
	8	4°48	5°88	0°00	0°01	77°09	1°48	9°26	I.		N.	
	9	4°86	6°41	0°00	0°01	89°28	1°50	3°45	II.		N.	
	10	4°98	6°58	0°00	0°01	101°47	1°51	357°55	II.		N.	
	11	+4°78	—6°41	0°00	—0°01	113°66	—1°52	351°94	II.		N.	
	12	4°27	5°92	0°00	0°01	125°85	1°52	346°90	II.		N.	
	13	3°46	5°17	0°00	0°01	138°05	1°53	342°64	II.		N.	
	14	2°39	4°19	0°00	0°01	150°26	1°53	339°27	II.		N.	
	15	+1°13	3°05	0°00	0°01	162°47	1°53	336°86	II.		N.	
	16	—0°24	—1°78	0°00	—0°01	174°69	—1°53	335°44	II.		N.	
	17	1°63	—0°44	0°00	0°01	186°91	1°53	335°01	II.		N.	
	18	2°95	+0°94	0°00	0°01	199°14	1°53	335°60	II.		N.	
	19	4°09	2°28	0°00	0°01	211°37	1°53	337°24	II.		N.	
	20	4°97	3°55	0°00	0°01	223°61	1°53	339°94	II.		N.	
	21	—5°53	+4°67	0°00	—0°01	235°85	—1°52	343°69				
	22	5°72	5°58	—0°01	0°01	248°10	1°52	348°42				
	23	5°52	6°22	—0°01	0°01	260°35	1°52	353°95				
	24	4°96	6°52	0°00	0°01	272°61	1°51	0°00				
	25	4°10	6°44	0°00	0°01	284°86	1°51	6°18				
	26	—3°03	+5°96	0°00	—0°01	297°11	—1°51	12°01				
	27	1°85	5°10	0°00	0°01	309°36	1°51	17°08				
	28	—0°65	3°92	0°00	0°01	321°60	1°51	21°05	I.		N.	
	29	+0°49	2°49	0°00	0°01	333°84	1°50	23°68	I.		N.	
	30	1°53	+0°91	0°00	0°01	346°08	1°51	24°88	I.		N.	
July	1	+2°44	—0°71	0°00	—0°01	358°30	—1°51	24°62	I.		N.	
	2	+3°22	—2°28	0°00	—0°01	10°52	—1°51	22°95	I.		N.	

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

Mid- night.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C	Illuminated Limbs at Transit at Greenwich, with Corrections to Defective Limbs when Observable.				
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		R.A.	S	Dec.		
July	1	+2°44	—0°71	0°00	—0°01	358°30	—1°51	24°62	I.		N.	"
	2	3°22	2°28	0°00	0°01	10°52	1°51	22°95	I.		N.	
	3	3°87	3°69	+0°01	0°01	22°73	1°51	19°97	I.		N.	
	4	4°38	4°88	0°01	0°01	34°94	1°52	15°85	I.		N.	
	5	4°75	5°77	0°01	0°01	47°14	1°52	10°83	I.		N.	
	6	+4°96	—6°34	+0°01	—0°01	59°34	—1°52	5°23	I.		N.	
	7	4°98	6°56	0°01	0°01	71°53	1°52	359°40	I.		N.	
	8	4°77	6°44	0°01	0°01	83°72	1°52	353°70	I.	0°04	N.	
	9	4°31	6°00	0°01	0°01	95°92	1°52	348°46	II.		N.	
	10	3°61	5°28	0°01	0°01	108°11	1°51	343°92	II.		N.	
	11	+2°66	—4°32	+0°01	—0°01	120°30	—1°51	340°24	II.		N.	
	12	1°50	3°19	0°01	0°01	132°50	1°50	337°51	II.		N.	
	13	+0°18	1°93	+0°01	0°01	144°71	1°49	335°77	II.		N.	
	14	—1°22	—0°59	0°00	0°01	156°92	1°48	335°03	II.		N.	
	15	2°62	+0°78	0°00	0°01	169°13	1°46	335°30	II.		N.	
	16	—3°94	+2°12	0°00	—0°01	181°35	—1°45	336°59	II.		N.	
	17	5°07	3°39	0°00	0°01	193°58	1°44	338°91	II.		N.	
	18	5°93	4°52	0°00	0°01	205°81	1°42	342°24	II.		N.	
	19	6°44	5°47	0°00	0°01	218°04	1°41	346°56	II.		N.	
	20	6°53	6°17	0°00	0°01	230°29	1°39	351°75				
	21	—6°17	+6°55	0°00	—0°01	242°53	—1°38	357°61				
	22	5°39	6°56	0°00	0°01	254°78	1°36	3°80				
	23	4°24	6°16	0°00	0°01	267°03	1°35	9°89				
	24	2°82	5°36	0°00	0°01	279°29	1°33	15°39				
	25	—1°25	4°20	0°00	0°01	291°54	1°32	19°88				
	26	+0°32	+2°75	+0°01	—0°01	303°79	—1°30	23°04				
	27	1°10	+1°12	0°01	0°01	316°03	1°29	24°70				
	28	3°10	—0°56	0°01	0°01	328°27	1°28	24°82	I.		N.	
	29	4°17	2°19	0°01	0°01	340°50	1°26	23°45	I.		N.	
	30	4°99	3°65	0°01	0°01	352°73	1°25	20°72	I.		N.	
Aug.	31	+5°56	—4°87	+0°01	—0°01	4°95	—1°24	16°82	I.		N.	
	1	5°89	5°80	0°02	0°01	17°16	1°23	12°01	I.		N.	
	2	6°00	6°40	0°02	0°01	29°36	1°22	6°58	I.		N.	
	3	5°88	6°65	0°02	0°01	41°56	1°21	0°85	I.		N.	
	4	5°55	6°57	0°02	0°01	53°76	1°19	355°17	I.		N.	
	5	+5°01	—6°16	+0°02	—0°01	65°95	—1°18	349°84	I.		N.	
	6	4°27	5°47	0°02	0°01	78°14	1°16	345°12	I.		N.	
	7	3°32	4°54	0°01	0°01	90°33	1°15	341°20	II.	0°06	N.	
	8	2°20	3°41	0°01	0°01	102°52	1°13	338°19	II.		N.	
	9	+0°92	2°14	0°01	0°01	114°71	1°11	336°16	II.		N.	
	10	—0°46	—0°78	+0°01	—0°01	126°90	—1°09	335°14	II.		N.	
	11	1°88	+0°60	0°01	0°01	139°09	1°07	335°12	II.		N.	
	12	3°29	1°96	0°01	—0°01	151°29	1°04	336°11	II.		N.	
	13	4°61	3°25	0°01	0°00	163°50	1°02	338°11	II.		N.	
	14	5°75	4°41	0°01	0°00	175°71	1°00	341°08	II.		N.	
	15	—6°62	+5°40	+0°01	0°00	187°93	—0°98	345°00	II.		N.	
16	—7°14	+6°15	+0°01	0°00	200°15	—0°95	349°80	II.		N.		

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

Mid- night.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C	Illuminated Limbs at Transit at Greenwich, with Corrections to Defective Limbs when Observable.		
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		R.A.	s	Dec.
Aug. 16	-7.14	+6.15	+0.01	0.00	200.15	-0.95	349.80	II.		N.
17	7.25	6.61	0.01	0.00	212.37	0.93	355.31	II.		N.
18	6.91	6.73	0.01	0.00	224.61	0.91	1.29	II.		N.
19	6.10	6.46	0.01	0.00	236.84	0.88	7.39			
20	4.87	5.78	0.01	0.00	249.08	0.86	13.16			
21	-3.29	+4.71	+0.01	0.00	261.33	-0.84	18.14			
22	-1.50	3.30	0.01	0.00	273.57	0.81	21.94			
23	+0.38	+1.65	0.01	0.00	285.82	0.78	24.26			
24	2.19	-0.12	0.01	0.00	298.06	0.76	24.95			
25	3.81	1.85	0.02	0.00	310.30	0.74	24.03			
26	+5.16	-3.44	+0.02	0.00	322.53	-0.71	21.62	I.		N.
27	6.17	4.77	0.02	0.00	334.75	0.69	17.92	I.		N.
28	6.84	5.79	0.02	0.00	346.97	0.67	13.22	I.		N.
29	7.16	6.46	0.02	0.00	359.18	0.64	7.84	I.		N.
30	7.14	6.77	0.02	0.00	11.39	0.62	2.13	I.		N.
Sept. 31	+6.83	-6.73	+0.02	0.00	23.58	-0.60	356.43	I.		S.
1	6.26	6.36	0.02	0.00	35.78	0.58	351.03	I.		S.
2	5.40	5.71	0.02	0.00	47.97	0.56	346.19	I.		S.
3	4.46	4.80	0.02	0.00	60.15	0.53	342.09	I.		S.
4	3.30	3.69	0.02	0.00	72.33	0.51	338.87	I.		S.
5	+2.02	-2.43	+0.02	0.00	84.51	-0.48	336.59	I.	0.16	S.
6	+0.65	-1.07	0.02	0.00	96.69	0.45	335.30	II.		N.
7	-0.77	+0.33	0.02	0.00	108.86	0.43	335.03	II.		N.
8	2.19	1.72	0.01	0.00	121.04	0.40	335.76	II.		N.
9	3.56	3.05	0.01	0.00	133.23	0.37	337.50	II.		N.
10	-4.82	+4.25	+0.01	0.00	145.41	-0.34	340.20	II.		N.
11	5.90	5.27	0.01	0.00	157.60	0.32	343.83	II.		N.
12	6.75	6.08	0.01	0.00	169.79	0.29	348.31	II.		N.
13	7.30	6.61	0.01	0.00	181.99	0.26	353.50	II.		N.
14	7.48	6.83	0.01	0.00	194.20	0.24	359.19	II.		N.
15	-7.25	+6.69	+0.01	0.00	206.41	-0.21	5.11	II.		N.
16	6.58	6.16	0.01	0.00	218.63	0.18	10.89	II.		S.
17	5.49	5.25	0.01	0.00	230.85	0.15	16.13			
18	4.01	3.97	0.01	0.00	243.07	0.12	20.42			
19	2.23	2.39	0.01	0.00	255.30	0.10	23.41			
20	-0.28	+0.63	+0.02	0.00	267.53	-0.07	24.85			
21	+1.70	-1.18	0.02	0.00	279.76	0.04	24.62			
22	3.57	2.90	0.02	0.00	291.99	-0.01	22.75			
23	5.19	4.39	0.02	0.00	304.22	+0.02	19.40			
24	6.46	5.56	0.02	0.00	316.44	0.05	14.86			
25	+7.32	-6.35	+0.02	0.00	328.65	+0.07	9.50	I.		N.
26	7.75	6.77	0.02	0.00	340.86	0.10	3.70	I.		N.
27	7.77	6.81	0.02	0.00	353.06	0.13	357.85	I.		S.
28	7.40	6.51	0.02	0.00	5.25	0.16	352.29	I.		S.
29	6.71	5.90	0.02	0.00	17.44	0.18	347.28	I.		S.
30	+5.74	-5.04	+0.02	0.00	29.62	+0.21	342.99	I.		S.
Oct. 1	+4.58	-3.97	+0.02	0.00	41.80	+0.24	339.56	I.		S.

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

Mid-night.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C	Illuminated Limbs at Transit at Greenwich, with Corrections to Defective Limbs when Observable.			
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		R.A.	s	Dec.	"
Oct.	1	+4°58	—3°97	+0°02	0°00	41°80	+0°24	339°56	I.		
	2	3°28	2°73	0°02	0°00	53°97	0°27	337°06	I.		
	3	1°89	—1°39	0°02	0°00	66°14	0°29	335°53	I.		
	4	+0°47	+0°01	0°02	0°00	78°30	0°32	335°00	I.		
	5	—0°93	1°41	0°01	0°00	90°46	0°35	335°49	I.	0°00	0°45
	6	—2°27	+2°76	+0°01	0°00	102°62	+0°38	336°99	II.		0°23
	7	3°52	3°99	0°01	0°00	114°79	0°41	339°47	II.		
	8	4°63	5°06	0°01	0°00	126°95	0°43	342°89	II.		
	9	5°56	5°91	0°01	0°00	139°12	0°46	347°17	II.		
	10	6°29	6°50	0°01	0°00	151°29	0°48	352°16	II.		0°87
	11	—6°77	+6°78	+0°01	0°00	163°46	+0°50	357°66	II.		0°12
	12	6°96	6°73	0°01	0°00	175°64	0°53	3°42	II.		
	13	6°83	6°33	0°01	0°00	187°83	0°55	9°12	II.		
	14	6°35	5°56	0°01	0°00	200°02	0°58	14°40	II.		
	15	5°50	4°45	0°01	0°00	212°21	0°60	18°92	II.		
	16	—4°30	+3°03	+0°01	0°00	224°42	+0°63	22°35	II.		
	17	2°78	+1°38	0°01	0°00	236°62	0°65	24°42			
	18	—1°03	—0°39	0°02	0°00	248°84	0°68	24°93			
	19	+0°86	2°15	0°02	0°00	261°05	0°70	23°80			
	20	2°73	3°75	0°02	0°00	273°27	0°73	21°07			
	21	+4°45	—5°07	+0°02	0°00	285°48	+0°76	16°94			
	22	5°88	6°03	0°02	0°00	297°69	0°78	11°73			
	23	6°92	6°59	0°02	0°00	309°90	0°81	5°87			
	24	7°50	6°75	0°02	0°00	322°10	0°83	359°81	I.		
	25	7°61	6°54	0°02	0°00	334°29	0°86	353°97	I.		
	26	+7°29	—6°00	+0°02	0°00	346°48	+0°88	348°65	I.		
	27	6°59	5°19	0°02	0°00	358°66	0°91	344°07	I.		
	28	5°57	4°16	0°02	0°00	10°83	0°93	340°37	I.		
	29	4°34	2°96	0°02	0°00	23°00	0°96	337°61	I.		
	30	2°97	1°65	0°02	0°00	35°16	0°98	335°83	I.		
Nov.	31	+1°54	—0°28	+0°01	0°00	47°32	+1°00	335°04	I.		
	1	+0°13	+1°10	0°01	0°00	59°48	1°03	335°26	I.		
	2	—1°21	2°45	0°01	0°00	71°63	1°05	336°50	I.		
	3	2°42	3°69	0°01	0°00	83°77	1°07	338°75	I.		
	4	3°48	4°79	0°01	+0°01	95°92	1°09	341°96	II.	0°11	
	5	—4°35	+5°67	+0°01	+0°01	108°06	+1°11	346°08	II.		0°31
	6	5°02	6°30	0°01	0°01	120°21	1°13	350°96	II.		0°20
	7	5°49	6°63	0°01	0°01	132°35	1°14	356°40	II.		0°98
	8	5°75	6°63	0°01	+0°01	144°50	1°16	2°13	II.		
	9	5°80	6°29	0°01	0°00	156°66	1°17	7°82	II.		
	10	—5°62	+5°61	+0°01	0°00	168°82	+1°18	13°15	II.		
	11	5°22	4°60	0°01	0°00	180°98	1°20	17°79	II.		
	12	4°57	3°31	0°01	0°00	193°16	1°21	21°45	II.		
	13	3°66	1°79	0°01	0°00	205°33	1°22	23°89	II.		
	14	2°50	+0°13	0°01	0°00	217°52	1°24	24°93	II.		
	15	—1°12	—1°55	+0°01	0°00	229°71	+1°26	24°45			
	16	+0°43	—3°15	+0°01	0°00	241°90	+1°27	22°42			



## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF THE MOON.

Mid-night.	The Earth's Selenographic—		Physical Libration.		The Sun's Selenographic—		C	Illuminated Limbs at Transit at Greenwich, with Corrections to Defective Limbs when Observable.			
	Long.	Lat.	Long.	Lat.	Colong.	Lat.		R.A.	s	Dec.	"
Nov. 16	+0°43	-3°15	+0°01	0°00	241°90	+1°27	22°42				
17	2°03	4°54	0°01	0°00	254°10	1°29	18°92				
18	3°58	5°61	0°01	+0°01	266°30	1°30	14°15				
19	4°93	6°31	0°01	0°01	278°50	1°32	8°48				
20	5°96	6°60	0°01	0°01	290°70	1°34	2°34				
21	+6°58	-6°49	+0°01	+0°01	302°89	+1°35	356°22				
22	6°76	6°03	0°01	0°01	315°08	1°37	350°52	I.		S.	
23	6°49	5°27	0°01	0°01	327°27	1°39	345°54	I.		S.	
24	5°82	4°27	0°01	0°01	339°45	1°40	341°45	I.		S.	
25	4°83	3°10	0°01	0°01	351°62	1°42	338°35	I.		S.	
26	+3°59	-1°82	+0°01	+0°01	3°78	+1°43	336°25	I.		S.	
27	2°21	-0°47	0°01	0°01	15°94	1°44	335°17	I.		S.	
28	+0°78	+0°89	+0°01	0°01	28°09	1°46	335°10	I.		S.	
29	-0°61	2°22	0°00	0°01	40°24	1°47	336°04	I.		S.	
30	1°87	3°46	0°00	0°01	52°38	1°48	337°98	I.		S.	
Dec. 1	-2°95	+4°56	0°00	+0°01	64°52	+1°49	340°92	I.		S.	
2	3°79	5°47	0°00	0°01	76°66	1°50	344°80	I.		S.	
3	4°39	6°13	0°00	0°01	88°79	1°51	349°52	I.		S.	
4	4°73	6°49	0°00	0°01	100°92	1°51	354°91	II.		S.	
5	4°83	6°53	0°00	0°01	113°05	1°51	0°69	II.		S.	
6	-4°73	+6°22	0°00	+0°01	125°18	+1°51	6°52	II.		S.	
7	4°46	5°57	0°00	0°01	137°32	1°51	12°03	II.		S.	
8	4°05	4°60	0°00	0°01	149°46	1°51	16°87	II.		S.	
9	3°51	3°35	0°00	0°01	161°60	1°51	20°75	II.		S.	
10	2°85	1°89	0°00	0°01	173°75	1°51	23°45	II.		S.	
11	-2°07	+0°30	0°00	+0°01	185°91	+1°50	24°81	II.		S.	
12	1°17	-1°32	0°00	0°01	198°08	1°50	24°74	II.		S.	
13	-0°14	2°86	0°00	0°01	210°25	1°50	23°22	II.		S.	
14	+0°99	4°23	+0°01	0°01	222°43	1°50	20°29				
15	2°17	5°34	0°01	0°01	234°61	1°51	16°08				
16	+3°31	-6°11	+0°01	+0°01	246°80	+1°51	10°82				
17	4°32	6°49	0°01	0°01	258°99	1°51	4°89				
18	5°09	6°47	0°01	0°01	271°18	1°52	358°71				
19	5°55	6°09	0°01	0°01	283°37	1°52	352°75				
20	5°63	5°38	+0°01	0°01	295°55	1°52	347°38				
21	+5°32	-4°41	0°00	+0°01	307°74	+1°53	342°86				
22	4°65	3°25	0°00	0°01	319°92	1°53	339°33	I.		S.	
23	3°66	1°97	0°00	0°01	332°09	1°53	336°84	I.		S.	
24	2°44	-0°61	0°00	0°01	344°26	1°53	335°41	I.		S.	
25	+1°07	+0°75	0°00	0°01	356°42	1°53	335°01	I.		S.	
26	-0°34	+2°08	0°00	+0°01	8°58	+1°53	335°63	I.		S.	
27	1°71	3°32	0°00	0°01	20°73	1°53	337°24	I.		S.	
28	2°93	4°43	0°00	0°01	32°87	1°53	339°83	I.		S.	
29	3°92	5°36	0°00	0°01	45°01	1°53	343°38	I.		S.	
30	4°63	6°06	-0°01	0°01	57°15	1°52	347°81	I.		S.	
31	-5°02	+6°47	-0°01	+0°01	69°28	+1°51	353°01	I.		S.	
32	-5°08	+6°56	-0°01	+0°01	81°41	+1°50	358°74	I.		S.	

## ILLUMINATED DISC OF MERCURY.

Noon.	<i>k</i>	<i>i</i>	$\theta$	<i>L</i>	Stellar Mag.	Noon.	<i>k</i>	<i>i</i>	$\theta$	<i>L</i>	Stellar Mag.
Jan. 1	0.996	8	29	27.3	-0.8	July 5	0.226	123	166	28.0	+1.2
6	0.984	15	10	30.8	0.8	10	0.348	108	171	38.4	0.7
11	0.959	23	1	36.4	0.9	15	0.492	91	176	49.2	+0.1
16	0.911	35	353	44.6	0.9	20	0.653	72	182	59.8	-0.4
21	0.826	49	348	55.3	0.8	25	0.812	51	189	67.4	1.0
26	0.682	69	342	65.5	-0.6	30	0.932	30	199	67.7	-1.4
31	0.472	93	338	65.4	-0.2	Aug. 4	0.991	11	223	60.5	1.6
Feb. 5	0.234	122	332	44.0	+0.7	9	0.994	9	342	50.6	1.5
10	0.055	153	318	12.3	1.9	14	0.967	21	8	42.1	1.0
15	0.012	168	219	2.6	2.7	19	0.927	31	16	35.9	0.7
20	0.093	145	177	16.7	+1.7	24	0.883	40	20	32.0	-0.4
25	0.224	123	169	30.3	1.1	29	0.838	48	23	29.7	-0.2
Mar. 2	0.352	107	165	35.2	0.7	Sept. 3	0.791	54	24	28.8	0.0
7	0.460	95	162	35.2	0.5	8	0.740	61	26	29.0	+0.1
12	0.547	85	159	33.5	0.4	13	0.683	69	27	30.3	0.2
17	0.619	76	157	31.9	+0.3	18	0.614	77	27	32.4	+0.3
22	0.681	69	154	31.0	0.2	23	0.528	87	28	35.0	0.4
27	0.738	62	152	30.9	+0.1	28	0.419	99	29	36.8	0.6
Apr. 1	0.791	54	150	32.1	-0.1	Oct. 3	0.282	116	30	34.4	0.9
6	0.845	46	149	34.7	0.4	8	0.130	138	34	22.0	1.5
11	0.899	37	148	39.2	-0.7	13	0.015	166	48	3.3	+2.6
16	0.951	26	147	45.9	1.1	18	0.033	159	198	7.5	2.2
21	0.990	11	145	54.8	1.5	23	0.210	125	207	40.2	+0.8
26	0.997	7	344	64.0	1.8	28	0.453	95	208	62.0	-0.1
May 1	0.946	27	338	68.9	1.5	Nov. 2	0.663	71	209	61.5	0.5
6	0.835	48	340	66.1	-1.0	7	0.806	52	208	51.7	-0.7
11	0.693	67	344	57.8	-0.5	12	0.893	38	206	41.9	0.7
16	0.550	84	347	48.5	0.0	17	0.944	27	203	34.5	0.7
21	0.422	99	351	40.2	+0.5	22	0.974	19	199	29.6	0.7
26	0.308	113	354	32.6	0.9	27	0.990	11	192	26.5	0.7
31	0.206	126	357	24.9	+1.3	Dec. 2	0.998	5	176	24.8	-0.8
June 5	0.119	140	1	16.4	1.8	7	1.000	2	77	24.3	0.8
10	0.050	154	8	7.7	2.4	12	0.996	7	29	24.9	0.7
15	0.010	168	34	1.7	3.0	17	0.986	14	17	26.6	0.7
20	0.010	168	126	1.7	3.0	22	0.967	21	9	29.8	0.7
25	0.051	154	153	7.9	+2.3	27	0.936	29	3	34.8	-0.7
30	0.125	139	161	17.6	+1.7	32	0.882	40	358	42.3	-0.7

## ILLUMINATED DISC OF VENUS.

Noon.	<i>k</i>	<i>i</i>	$\theta$	<i>L</i>	Stellar Mag.	Noon.	<i>k</i>	<i>i</i>	$\theta$	<i>L</i>	Stellar Mag.
Jan. 1	0.988	12.6	179.2	47.0	—3.4	July 5	0.778	56.2	15.8	70.8	—3.5
6	0.991	11.0	175.0	46.6	3.4	10	0.762	58.4	17.4	73.3	3.5
11	0.993	9.4	170.4	46.3	3.4	15	0.746	60.6	18.9	76.0	3.5
16	0.995	7.8	165.2	46.0	3.4	20	0.728	62.8	20.1	79.0	3.5
21	0.997	6.2	158.9	45.8	3.5	25	0.711	65.1	21.2	82.2	3.6
26	0.998	4.7	150.6	45.6	—3.5	30	0.693	67.3	22.0	85.8	—3.6
31	0.999	3.2	137.2	45.5	3.5	Aug. 4	0.674	69.6	22.7	89.7	3.6
Feb. 5	1.000	2.1	109.8	45.4	3.5	9	0.655	72.0	23.2	94.0	3.7
10	1.000	1.8	58.8	45.4	3.5	14	0.635	74.3	23.5	98.7	3.7
15	0.999	2.8	22.4	45.4	3.5	19	0.615	76.7	23.7	103.9	3.7
20	0.999	4.2	6.3	45.4	—3.5	24	0.594	79.2	23.7	109.6	—3.8
25	0.998	5.7	357.8	45.5	3.5	29	0.572	81.8	23.5	115.8	3.8
Mar. 2	0.996	7.3	352.6	45.7	3.4	Sept. 3	0.549	84.4	23.2	122.7	3.9
7	0.994	9.0	348.9	45.9	3.4	8	0.525	87.1	22.7	130.3	3.9
12	0.991	10.7	346.4	46.2	3.4	13	0.500	90.0	22.1	138.5	4.0
17	0.988	12.4	344.6	46.5	—3.4	18	0.474	93.0	21.5	147.4	—4.0
22	0.985	14.1	343.3	46.8	3.4	23	0.446	96.2	20.7	156.9	4.1
27	0.981	15.8	342.5	47.2	3.4	28	0.416	99.6	19.9	166.8	4.2
Apr. 1	0.976	17.6	342.1	47.7	3.4	Oct. 3	0.385	103.3	19.1	177.0	4.2
6	0.971	19.5	342.1	48.2	3.4	8	0.351	107.3	18.4	186.6	4.2
11	0.966	21.3	342.5	48.7	—3.4	13	0.315	111.7	17.8	194.9	—4.3
16	0.960	23.2	343.1	49.4	3.4	18	0.276	116.6	17.4	200.3	4.3
21	0.953	25.1	344.1	50.1	3.4	23	0.235	122.0	17.3	200.5	4.3
26	0.945	27.0	345.4	50.8	3.3	28	0.191	128.2	17.6	192.5	4.3
May 1	0.937	29.0	346.9	51.6	3.3	Nov. 2	0.145	135.3	18.4	172.7	4.2
6	0.929	30.9	348.7	52.5	—3.3	7	0.099	143.3	20.0	138.4	—4.1
11	0.920	32.9	350.7	53.4	3.3	12	0.057	152.3	22.7	91.6	3.9
16	0.910	35.0	352.9	54.5	3.3	17	0.024	162.3	27.7	42.1	3.5
21	0.899	37.0	355.3	55.6	3.3	22	0.004	172.8	43.9	7.6	3.1
26	0.888	39.1	357.7	56.8	3.4	27	0.002	174.5	168.1	4.3	3.0
31	0.876	41.2	0.2	58.1	—3.4	Dec. 2	0.019	164.2	191.3	34.8	—3.5
June 5	0.864	43.3	2.7	59.5	3.4	7	0.051	153.9	196.2	84.8	3.8
10	0.851	45.4	5.2	61.0	3.4	12	0.092	144.6	198.1	135.4	4.1
15	0.838	47.5	7.6	62.7	3.4	17	0.138	136.3	198.7	174.6	4.2
20	0.824	49.7	9.9	64.5	3.4	22	0.185	129.0	198.6	198.9	4.3
25	0.809	51.8	12.0	66.4	—3.4	27	0.231	122.5	198.0	210.1	—4.4
30	0.794	54.0	14.0	68.5	—3.4	32	0.274	116.8	197.0	211.9	—4.4

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

Midnight.	Light-Time.	Stellar Magnitude.	P	$A_{\oplus} + 180^{\circ}$	$D_{\oplus}$	$A_{\odot} - A_{\oplus}$	$D_{\odot}$	$\odot \delta$
m								
Jan. 1	14.64	+1.5	36.06	308.17	+18.44	-35.32	+23.96	92.61
3	14.48	1.5	36.20	309.34	18.11	35.52	23.93	93.50
5	14.32	1.5	36.33	310.51	17.78	35.70	23.91	94.39
7	14.16	1.4	36.43	311.66	17.44	35.88	23.87	95.29
9	14.00	1.4	36.53	312.81	17.10	36.05	23.83	96.18
11	13.84	+1.4	36.60	313.94	+16.75	-36.20	+23.79	97.08
13	13.67	1.4	36.66	315.07	16.40	36.35	23.73	97.98
15	13.50	1.4	36.70	316.19	16.04	36.49	23.68	98.88
17	13.34	1.3	36.73	317.31	15.68	36.62	23.61	99.78
19	13.18	1.3	36.75	318.41	15.32	36.74	23.54	100.68
21	13.01	+1.3	36.75	319.50	+14.95	-36.86	+23.46	101.59
23	12.85	1.2	36.73	320.59	14.58	36.96	23.38	102.49
25	12.68	1.2	36.70	321.66	14.20	37.05	23.29	103.40
27	12.51	1.2	36.66	322.73	13.82	37.13	23.19	104.31
29	12.34	1.2	36.60	323.79	13.44	37.20	23.09	105.22
31	12.18	+1.1	36.52	324.83	+13.06	-37.26	+22.98	106.13
Feb. 2	12.01	1.1	36.44	325.87	12.68	37.32	22.87	107.05
4	11.84	1.1	36.34	326.90	12.30	37.36	22.74	107.97
6	11.67	1.0	36.23	327.92	11.91	37.39	22.62	108.89
8	11.50	1.0	36.10	328.93	11.52	37.41	22.48	109.81
10	11.34	+1.0	35.97	329.92	+11.14	-37.42	+22.34	110.73
12	11.17	0.9	35.82	330.91	10.75	37.42	22.19	111.66
14	11.00	0.9	35.66	331.89	10.37	37.41	22.04	112.58
16	10.83	0.9	35.49	332.86	9.98	37.39	21.88	113.51
18	10.66	0.8	35.31	333.81	9.60	37.36	21.72	114.44
20	10.49	+0.8	35.12	334.76	+9.22	-37.32	+21.54	115.38
22	10.33	0.8	34.93	335.70	8.84	37.27	21.37	116.31
24	10.16	0.7	34.72	336.62	8.46	37.21	21.18	117.25
26	9.99	0.7	34.50	337.53	8.09	37.13	20.99	118.19
28	9.83	0.7	34.28	338.43	7.72	37.04	20.79	119.14
Mar. 2	9.66	+0.6	34.05	339.32	+7.35	-36.94	+20.59	120.08
4	9.49	0.6	33.81	340.19	6.99	36.83	20.38	121.03
6	9.33	0.5	33.57	341.05	6.64	36.71	20.17	121.98
8	9.17	0.5	33.33	341.90	6.28	36.57	19.95	122.93
10	9.00	0.4	33.08	342.73	5.94	36.41	19.72	123.89
12	8.84	+0.4	32.82	343.55	+5.60	-36.25	+19.48	124.85
14	8.68	0.4	32.56	344.36	5.26	36.07	19.24	125.81
16	8.52	0.3	32.30	345.15	4.94	35.87	19.00	126.77
18	8.36	0.3	32.04	345.93	4.62	35.66	18.75	127.74
20	8.20	0.2	31.78	346.68	4.31	35.43	18.49	128.71
22	8.04	+0.2	31.51	347.42	+4.00	-35.19	+18.23	129.68
24	7.89	0.1	31.25	348.15	3.71	34.92	17.96	130.65
26	7.73	+0.1	30.99	348.85	3.43	34.64	17.68	131.63
28	7.58	0.0	30.73	349.54	3.16	34.34	17.40	132.61
30	7.43	0.0	30.47	350.20	2.89	34.02	17.12	133.60
Apr. 1	7.28	-0.1	30.22	350.85	+2.64	-33.68	+16.83	134.58

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

Mid-night.	<i>k</i>	Diameter.	<i>i</i>	<i>q</i>	<i>Q</i>	Central Meridian.		Mean Time of Transit of Zero Meridian.	
						Of Date.	Of Intermediate Date.	Of Date.	Of Intermediate Date.
Jan.	1	0.918	5.31	33.30	0.44	290.28	272.37	262.70	h m
	3	0.917	5.37	33.57	0.45	290.00	253.02	243.35	18 0.2
	5	0.915	5.43	33.83	0.46	289.71	233.68	224.02	19 19.7
	7	0.914	5.49	34.09	0.47	289.42	214.35	204.69	20 39.2
	9	0.913	5.56	34.34	0.48	289.12	195.03	185.37	21 58.6
	11	0.912	5.62	34.58	0.50	288.82	175.72	166.06	22 38.4
	13	0.910	5.69	34.82	0.51	288.51	156.41	146.76	23 18.1
	15	0.909	5.76	35.06	0.52	288.19	137.12	127.47	..
	17	0.908	5.83	35.29	0.54	287.86	117.83	108.19	0 37.4
	19	0.907	5.90	35.51	0.55	287.53	98.55	88.91	1 17.1
	21	0.906	5.98	35.72	0.56	287.20	79.28	69.65	2 36.4
	23	0.905	6.05	35.93	0.58	286.86	60.02	50.39	3 55.7
	25	0.904	6.13	36.13	0.59	286.52	40.77	31.15	4 54.6
	27	0.903	6.22	36.32	0.60	286.17	21.53	11.91	5 15.0
	29	0.902	6.30	36.51	0.62	285.81	2.30	352.68	6 34.2
	31	0.901	6.39	36.68	0.63	285.46	343.07	333.47	7 53.3
Feb.	2	0.900	6.48	36.85	0.65	285.10	323.86	314.26	8 32.9
	4	0.899	6.57	37.01	0.66	284.73	304.66	295.06	9 52.0
	6	0.898	6.66	37.16	0.68	284.36	285.47	275.87	10 31.5
	8	0.898	6.76	37.30	0.69	283.99	266.28	256.70	11 11.0
	10	0.897	6.86	37.42	0.71	283.62	247.11	237.53	12 30.1
	12	0.896	6.96	37.54	0.72	283.25	227.95	218.37	13 9.6
	14	0.896	7.07	37.65	0.74	282.87	208.79	199.22	14 28.5
	16	0.895	7.18	37.75	0.75	282.49	189.65	180.08	15 47.4
	18	0.895	7.29	37.84	0.77	282.11	170.52	160.96	16 6.3
	20	0.894	7.41	37.91	0.78	281.73	151.40	141.84	17 25.1
	22	0.894	7.53	37.98	0.80	281.35	132.29	122.74	18 4.5
	24	0.894	7.66	38.03	0.81	280.97	113.19	103.64	19 43.9
	26	0.894	7.78	38.06	0.83	280.59	94.10	84.56	20 23.3
	28	0.894	7.92	38.08	0.84	280.21	75.03	65.49	21 2.6
Mar.	2	0.894	8.05	38.09	0.86	279.84	55.96	46.44	22 21.3
	4	0.894	8.19	38.08	0.87	279.46	36.91	27.39	23 0.7
	6	0.894	8.34	38.06	0.89	279.09	17.88	8.36	..
	8	0.894	8.49	38.02	0.90	278.72	358.85	349.35	0 19.3
	10	0.894	8.64	37.96	0.91	278.36	339.84	330.34	1 37.9
	12	0.895	8.80	37.89	0.93	278.00	320.85	311.35	2 56.4
	14	0.895	8.96	37.80	0.94	277.64	301.86	292.38	3 35.7
	16	0.896	9.13	37.69	0.95	277.29	282.90	273.42	4 14.9
	18	0.896	9.30	37.56	0.96	276.95	263.94	254.47	4 54.1
	20	0.897	9.48	37.40	0.97	276.62	245.01	235.55	5 33.3
	22	0.898	9.67	37.23	0.98	276.29	226.09	216.64	6 12.5
	24	0.899	9.86	37.03	0.99	275.97	207.19	197.75	6 51.7
	26	0.900	10.06	36.81	1.00	275.66	188.31	178.87	7 30.9
	28	0.902	10.26	36.57	1.01	275.36	169.44	160.02	8 10.1
	30	0.903	10.47	36.30	1.02	275.07	150.60	141.19	9 28.3
Apr. 1	0.905	10.69	36.00	1.02	274.79	131.78	122.37	10 46.6	10 7.5

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

Midnight.	Light-Time.	Stellar Magnitude.	$P$	$A_{\oplus} + 180^{\circ}$	$D_{\oplus}$	$A_{\odot} - A_{\oplus}$	$D_{\odot}$	$\odot \delta$
<b>Apr.</b>								
	m							
1	7.28	—0.1	30.22	350.85	+2.64	—33.68	+16.83	134.58
3	7.13	0.1	29.98	351.47	2.41	33.31	16.53	135.57
5	6.98	0.2	29.74	352.07	2.18	32.92	16.23	136.57
7	6.84	0.2	29.50	352.64	1.97	32.52	15.92	137.56
9	6.69	0.3	29.28	353.19	1.78	32.08	15.60	138.56
11	6.55	—0.4	29.06	353.71	+1.60	—31.62	+15.28	139.56
13	6.41	0.4	28.85	354.21	1.43	31.13	14.96	140.57
15	6.28	0.5	28.66	354.68	1.28	30.61	14.63	141.58
17	6.14	0.5	28.47	355.12	1.15	30.06	14.29	142.59
19	6.01	0.6	28.30	355.53	1.03	29.49	13.95	143.61
21	5.88	—0.6	28.15	355.91	+0.94	—28.88	+13.61	144.63
23	5.75	0.7	28.00	356.25	0.86	28.23	13.26	145.65
25	5.63	0.8	27.88	356.55	0.80	27.55	12.90	146.67
27	5.50	0.8	27.77	356.82	0.77	26.83	12.54	147.70
29	5.38	0.9	27.68	357.06	0.76	26.08	12.18	148.74
<b>May</b>								
1	5.27	—1.0	27.61	357.25	+0.77	—25.28	+11.81	149.77
3	5.16	1.0	27.56	357.40	0.80	24.44	11.43	150.81
5	5.05	1.1	27.52	357.52	0.85	23.56	11.05	151.85
7	4.94	1.2	27.51	357.59	0.93	22.64	10.67	152.90
9	4.84	1.2	27.52	357.62	1.04	21.68	10.28	153.95
11	4.74	—1.3	27.55	357.60	+1.16	—20.67	+9.89	155.00
13	4.65	1.3	27.61	357.54	1.31	19.62	9.49	156.06
15	4.56	1.4	27.69	357.44	1.49	18.52	9.09	157.12
17	4.47	1.5	27.79	357.29	1.69	17.38	8.68	158.19
19	4.39	1.5	27.91	357.10	1.91	16.19	8.28	159.26
21	4.32	—1.6	28.05	356.86	+2.16	—14.95	+7.86	160.33
23	4.24	1.7	28.21	356.58	2.43	13.67	7.45	161.41
25	4.18	1.7	28.40	356.26	2.72	12.35	7.03	162.49
27	4.12	1.8	28.60	355.90	3.03	10.98	6.60	163.57
29	4.06	1.8	28.82	355.51	3.35	9.58	6.17	164.66
31	4.01	—1.9	29.05	355.08	+3.69	—8.14	+5.74	165.75
<b>June</b>								
2	3.96	1.9	29.29	354.62	4.05	6.67	5.31	166.84
4	3.92	2.0	29.54	354.13	4.42	5.18	4.87	167.94
6	3.88	2.0	29.81	353.62	4.79	3.65	4.43	169.04
8	3.85	2.1	30.07	353.10	5.17	2.11	3.99	170.15
10	3.83	—2.1	30.34	352.56	+5.54	—0.55	+3.54	171.26
12	3.81	2.1	30.61	352.01	5.92	+1.01	3.09	172.37
14	3.80	2.1	30.87	351.46	6.30	2.59	2.64	173.49
16	3.79	2.1	31.13	350.91	6.67	4.16	2.19	174.61
18	3.79	2.1	31.38	350.37	7.02	5.73	1.73	175.74
20	3.79	—2.0	31.62	349.84	+7.37	+7.29	+1.27	176.87
22	3.80	2.0	31.85	349.33	7.70	8.84	0.81	178.00
24	3.81	2.0	32.07	348.84	8.01	10.37	+0.35	179.14
26	3.83	1.9	32.27	348.38	8.30	11.87	—0.11	180.28
28	3.85	1.9	32.45	347.96	8.56	13.34	0.58	181.42
30	3.88	—1.9	32.61	347.57	+8.80	+14.78	—1.04	182.57
<b>July</b>								
2	3.91	—1.8	32.76	347.22	+9.02	+16.18	—1.51	183.72

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

Mid-night.	<i>k</i>	Diameter.	<i>s</i>	<i>q</i>	<i>Q</i>	Central Meridian.		Mean Time of Transit of Zero Meridian.	
						Of Date.	Of Intermediate Date.	Of Date.	Of Intermediate Date.
								h m	h m
Apr. 1	0.905	10.69	36.00	1.02	274.79	131.78	122.37	2 58.8	3 37.4
3	0.906	10.91	35.67	1.02	274.52	112.98	103.58	4 16.0	4 54.6
5	0.908	11.14	35.31	1.02	274.27	94.20	84.82	5 33.1	6 11.7
7	0.910	11.38	34.93	1.02	274.04	75.44	66.07	6 50.2	7 28.6
9	0.912	11.62	34.51	1.02	273.82	56.71	47.35	8 7.1	8 45.5
11	0.914	11.87	34.06	1.02	273.61	38.00	28.66	9 23.9	10 2.3
13	0.917	12.13	33.58	1.01	273.43	19.33	10.00	10 40.6	11 18.9
15	0.919	12.39	33.05	1.00	273.26	0.67	351.36	11 57.2	12 35.5
17	0.922	12.66	32.50	0.99	273.12	342.05	332.75	13 13.7	13 51.9
19	0.924	12.94	31.90	0.98	273.00	323.46	314.18	14 30.0	15 8.1
21	0.927	13.23	31.26	0.96	272.90	304.90	295.63	15 46.2	16 24.3
23	0.930	13.52	30.58	0.94	272.83	286.37	277.12	17 2.3	17 40.3
25	0.934	13.82	29.86	0.92	272.78	267.88	258.65	18 18.2	18 56.1
27	0.937	14.13	29.09	0.89	272.77	249.42	240.21	19 33.9	20 11.7
29	0.940	14.44	28.27	0.86	272.79	231.00	221.81	20 49.5	21 27.2
May 1	0.944	14.76	27.41	0.83	272.85	212.62	203.45	22 4.9	22 42.6
3	0.948	15.08	26.49	0.79	272.95	194.28	185.12	23 20.2	23 57.7
5	0.951	15.41	25.53	0.75	273.09	175.98	166.84	..	0 35.2
7	0.955	15.73	24.52	0.71	273.27	157.72	148.60	1 12.7	1 50.2
9	0.959	16.06	23.45	0.66	273.51	139.50	130.40	2 27.5	3 4.9
11	0.962	16.40	22.33	0.61	273.81	121.32	112.25	3 42.2	4 19.4
13	0.966	16.73	21.16	0.56	274.17	103.19	94.14	4 56.6	5 33.7
15	0.970	17.06	19.94	0.51	274.61	85.10	76.07	6 10.8	6 47.9
17	0.974	17.39	18.66	0.46	275.14	67.05	58.04	7 24.9	8 1.9
19	0.977	17.71	17.33	0.40	275.78	49.04	40.06	8 38.8	9 15.7
21	0.981	18.02	15.94	0.35	276.55	31.08	22.12	9 52.5	10 29.3
23	0.984	18.33	14.51	0.29	277.49	13.16	4.22	11 6.0	11 42.7
25	0.987	18.62	13.03	0.24	278.64	355.28	346.36	12 19.3	12 55.9
27	0.990	18.90	11.51	0.19	280.09	337.44	328.53	13 32.5	14 9.0
29	0.992	19.16	9.96	0.14	281.99	319.64	310.75	14 45.5	15 22.0
31	0.995	19.41	8.37	0.10	284.57	301.86	292.99	15 58.4	16 34.8
June 2	0.997	19.64	6.77	0.07	288.32	284.12	275.26	17 11.2	17 47.5
4	0.998	19.84	5.18	0.04	294.30	266.40	257.55	18 23.8	19 0.2
6	0.999	20.02	3.66	0.02	305.26	248.70	239.86	19 36.4	20 12.7
8	1.000	20.17	2.41	0.01	329.22	231.02	222.18	20 48.9	21 25.1
10	1.000	20.30	2.08	0.01	14.90	213.35	204.51	22 1.4	22 37.6
12	0.999	20.40	3.01	0.01	50.29	195.68	186.85	23 13.8	23 50.0
14	0.998	20.47	4.48	0.03	66.17	178.02	169.19	..	0 26.2
16	0.997	20.52	6.11	0.06	74.11	160.35	151.52	1 2.5	1 38.7
18	0.995	20.53	7.79	0.10	78.83	142.68	133.84	2 14.9	2 51.2
20	0.993	20.51	9.49	0.14	81.98	124.99	116.14	3 27.4	4 3.7
22	0.990	20.47	11.18	0.19	84.26	107.28	98.42	4 40.0	5 16.4
24	0.987	20.40	12.86	0.26	86.02	89.55	80.68	5 52.7	6 29.1
26	0.984	20.30	14.51	0.32	87.43	71.79	62.90	7 5.6	7 42.0
28	0.980	20.18	16.14	0.40	88.58	54.00	45.09	8 18.5	8 55.1
30	0.976	20.04	17.72	0.48	89.56	36.17	27.24	9 31.7	10 8.3
July 2	0.972	19.88	19.26	0.56	90.40	18.29	9.34	10 45.0	11 21.7

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

Midnight.		Light-Time.	Stellar Magnitude.	$P$	$A_{\oplus} + 180^{\circ}$	$D_{\oplus}$	$A_{\odot} - A_{\oplus}$	$D_{\odot}$	$\odot \delta$
<b>July</b>									
		m							
	2	3.91	—1.8	32.76	347.22	+9.02	+16.18	—1.51	183.72
	4	3.95	1.8	32.89	346.91	9.21	17.55	1.98	184.88
	6	3.99	1.8	32.99	346.64	9.37	18.87	2.45	186.04
	8	4.03	1.7	33.08	346.42	9.50	20.16	2.92	187.20
	10	4.08	1.7	33.15	346.25	9.61	21.40	3.39	188.36
	12	4.13	—1.6	33.20	346.13	+9.68	+22.59	—3.86	189.53
	14	4.18	1.6	33.23	346.06	9.73	23.74	4.33	190.71
	16	4.24	1.6	33.24	346.04	9.75	24.85	4.80	191.89
	18	4.30	1.5	33.23	346.06	9.75	25.91	5.27	193.07
	20	4.36	1.5	33.20	346.14	9.71	26.93	5.74	194.25
	22	4.42	—1.4	33.16	346.26	+9.65	+27.90	—6.21	195.44
	24	4.49	1.4	33.10	346.43	9.57	28.83	6.68	196.63
	26	4.56	1.3	33.01	346.65	9.45	29.72	7.15	197.82
	28	4.63	1.3	32.91	346.91	9.32	30.57	7.61	199.02
	30	4.70	1.2	32.79	347.22	9.16	31.38	8.08	200.22
<b>Aug.</b>									
	1	4.78	—1.2	32.65	347.58	+8.97	+32.15	—8.54	201.42
	3	4.85	1.2	32.50	347.97	8.76	32.88	9.00	202.63
	5	4.93	1.1	32.32	348.41	8.54	33.58	9.46	203.84
	7	5.01	1.1	32.13	348.88	8.29	34.25	9.91	205.05
	9	5.09	1.0	31.92	349.39	8.02	34.88	10.36	206.27
	11	5.17	—1.0	31.69	349.94	+7.73	+35.49	—10.81	207.49
	13	5.25	1.0	31.44	350.52	7.43	36.07	11.26	208.71
	15	5.34	0.9	31.17	351.13	7.10	36.63	11.70	209.94
	17	5.42	0.9	30.89	351.78	6.76	37.15	12.14	211.17
	19	5.51	0.8	30.59	352.46	6.40	37.65	12.58	212.40
	21	5.60	—0.8	30.26	353.16	+6.03	+38.13	—13.01	213.63
	23	5.68	0.8	29.92	353.90	5.64	38.58	13.43	214.87
	25	5.77	0.7	29.56	354.66	5.24	39.02	13.86	216.10
	27	5.86	0.7	29.19	355.44	4.83	39.44	14.27	217.34
	29	5.95	0.6	28.79	356.26	4.40	39.84	14.68	218.59
<b>Sept.</b>									
	31	6.04	—0.6	28.37	357.09	+3.95	+40.22	—15.09	219.83
	2	6.13	0.6	27.94	357.95	3.50	40.58	15.49	221.08
	4	6.22	0.5	27.49	358.83	3.04	40.93	15.88	222.33
	6	6.32	0.5	27.02	359.73	2.56	41.27	16.27	223.58
	8	6.41	0.5	26.53	0.65	2.07	41.60	16.65	224.83
	10	6.50	—0.4	26.03	1.59	+1.58	+41.91	—17.02	226.09
	12	6.60	0.4	25.51	2.55	1.08	42.21	17.39	227.34
	14	6.69	0.4	24.97	3.53	0.57	42.49	17.75	228.60
	16	6.79	0.4	24.41	4.52	+0.05	42.77	18.10	229.86
	18	6.88	0.3	23.84	5.53	—0.48	43.04	18.44	231.12
	20	6.98	—0.3	23.25	6.56	—1.01	+43.29	—18.78	232.38
	22	7.08	0.3	22.65	7.61	1.55	43.54	19.11	233.64
	24	7.18	0.2	22.03	8.67	2.10	43.77	19.42	234.91
	26	7.27	0.2	21.39	9.75	2.65	44.00	19.73	236.17
	28	7.37	0.2	20.74	10.84	3.20	44.22	20.03	237.44
	30	7.47	—0.1	20.08	11.94	—3.76	+44.42	—20.32	238.71





## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

Midnight.	Light-Time.	Stellar Magni- tude.	$P$	$A_{\oplus} + 180^{\circ}$	$D_{\oplus}$	$A_{\odot} - A_{\oplus}$	$D_{\odot}$	$\odot \delta$
	m							
Sept. 30	7.47	-0.1	20.08	11.94	- 3.76	+44.42	-20.32	238.71
Oct. 2	7.57	0.1	19.40	13.06	4.32	44.62	20.60	239.98
4	7.67	0.1	18.70	14.20	4.88	44.81	20.87	241.24
6	7.77	-0.1	18.00	15.34	5.45	45.00	21.13	242.51
8	7.87	0.0	17.28	16.50	6.02	45.17	21.38	243.78
10	7.97	0.0	16.55	17.68	- 6.58	+45.34	-21.62	245.05
12	8.07	0.0	15.81	18.87	7.15	45.49	21.85	246.32
14	8.18	+0.1	15.06	20.07	7.72	45.64	22.07	247.59
16	8.28	0.1	14.30	21.28	8.29	45.78	22.28	248.86
18	8.38	0.1	13.53	22.50	8.86	45.91	22.47	250.13
20	8.49	+0.1	12.75	23.74	- 9.42	+46.03	-22.66	251.40
22	8.59	0.2	11.96	24.99	9.98	46.14	22.83	252.66
24	8.70	0.2	11.16	26.26	10.55	46.24	22.99	253.93
26	8.80	0.2	10.35	27.54	11.10	46.34	23.14	255.20
28	8.91	0.2	9.54	28.83	11.66	46.42	23.28	256.47
Nov. 30	9.02	+0.3	8.72	30.13	-12.21	+46.49	-23.40	257.73
1	9.13	0.3	7.89	31.44	12.75	46.55	23.51	259.00
3	9.23	0.3	7.05	32.77	13.29	46.60	23.61	260.26
5	9.34	0.3	6.21	34.11	13.82	46.63	23.70	261.52
7	9.45	0.4	5.36	35.46	14.34	46.66	23.78	262.79
9	9.56	+0.4	4.51	36.82	-14.86	+46.67	-23.84	264.05
11	9.67	0.4	3.66	38.19	15.37	46.67	23.89	265.31
13	9.78	0.4	2.80	39.57	15.88	46.66	23.93	266.56
15	9.89	0.5	1.94	40.97	16.37	46.64	23.96	267.82
17	10.01	0.5	1.07	42.38	16.85	46.61	23.98	269.07
19	10.12	+0.5	0.20	43.80	-17.33	+46.56	-23.98	270.33
21	10.23	0.5	359.33	45.23	17.80	46.49	23.97	271.58
23	10.35	0.5	358.46	46.68	18.25	46.41	23.95	272.83
25	10.46	0.6	357.58	48.13	18.69	46.32	23.92	274.07
27	10.57	0.6	356.70	49.60	19.12	46.22	23.87	275.32
29	10.69	+0.6	355.83	51.07	-19.54	+46.10	-23.81	276.56
Dec. 1	10.81	0.6	354.95	52.56	19.95	45.97	23.74	277.80
3	10.92	0.7	354.07	54.06	20.34	45.82	23.66	279.04
5	11.04	0.7	353.20	55.56	20.72	45.66	23.57	280.27
7	11.15	0.7	352.32	57.08	21.09	45.48	23.47	281.50
9	11.27	+0.7	351.45	58.60	-21.44	+45.29	-23.36	282.73
11	11.39	0.7	350.58	60.14	21.78	45.09	23.23	283.96
13	11.51	0.8	349.71	61.68	22.10	44.87	23.09	285.19
15	11.63	0.8	348.85	63.23	22.41	44.63	22.95	286.41
17	11.75	0.8	347.99	64.79	22.70	44.38	22.79	287.63
19	11.87	+0.8	347.13	66.36	-22.97	+44.12	-22.62	288.84
21	11.99	0.8	346.28	67.93	23.23	43.85	22.44	290.05
23	12.11	0.9	345.43	69.51	23.47	43.56	22.26	291.26
25	12.23	0.9	344.59	71.10	23.70	43.26	22.06	292.47
27	12.35	0.9	343.76	72.69	23.90	42.95	21.85	293.67
29	12.47	+0.9	342.93	74.29	-24.09	+42.62	-21.64	294.87
31	12.59	+1.0	342.11	75.89	-24.27	+42.28	-21.41	296.07

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF MARS.

Mid-night.	$k$	Diameter.	$\delta$	$\eta$	$Q$	Central Meridian.		Mean Time of Transit of Zero Meridian.	
						Of Date.	Of Intermediate Date.	Of Date.	Of Intermediate Date.
								h m	h m
Sept. 30	0.845	10.41	46.29	1.61	85.32	252.98	243.30	19 19.9	19 59.7
Oct. 2	0.845	10.27	46.30	1.59	84.82	233.62	223.94	20 39.5	21 19.3
4	0.845	10.14	46.31	1.57	84.31	214.25	204.55	21 59.1	22 39.0
6	0.845	10.01	46.30	1.55	83.81	194.86	185.16	23 18.9	23 58.7
8	0.845	9.88	46.29	1.53	83.30	175.46	165.75	..	0 38.6
10	0.846	9.75	46.26	1.51	82.79	156.04	146.33	1 18.5	1 58.4
12	0.846	9.63	46.22	1.48	82.28	136.61	126.90	2 38.4	3 18.3
14	0.846	9.51	46.17	1.46	81.77	117.17	107.45	3 58.3	4 38.3
16	0.847	9.39	46.11	1.44	81.26	97.72	87.99	5 18.3	5 58.3
18	0.847	9.28	46.04	1.42	80.75	78.25	68.51	6 38.3	7 18.3
20	0.848	9.16	45.96	1.40	80.25	58.77	49.03	7 58.4	8 38.4
22	0.848	9.05	45.88	1.37	79.75	39.28	29.53	9 18.5	9 58.6
24	0.849	8.94	45.78	1.35	79.25	19.77	10.01	10 38.7	11 18.8
26	0.849	8.83	45.68	1.33	78.76	0.25	350.49	11 58.9	12 39.1
28	0.850	8.73	45.57	1.31	78.27	340.72	330.95	13 19.3	13 59.4
30	0.851	8.62	45.45	1.29	77.78	321.18	311.40	14 39.6	15 19.8
Nov. 1	0.852	8.52	45.32	1.26	77.30	301.62	291.84	16 0.0	16 40.2
3	0.852	8.42	45.18	1.24	76.83	282.05	272.27	17 20.5	18 0.7
5	0.853	8.32	45.04	1.22	76.37	262.47	252.68	18 41.0	19 21.3
7	0.854	8.23	44.89	1.20	75.91	242.88	233.08	20 1.6	20 41.9
9	0.855	8.13	44.74	1.18	75.47	223.28	213.47	21 22.2	22 2.5
11	0.856	8.04	44.58	1.16	75.03	203.66	193.85	22 42.9	23 23.2
13	0.857	7.95	44.41	1.14	74.60	184.03	174.21	..	0 3.6
15	0.858	7.86	44.24	1.11	74.17	164.39	154.57	0 44.0	1 24.4
17	0.859	7.77	44.06	1.09	73.76	144.74	134.91	2 4.8	2 45.2
19	0.860	7.69	43.88	1.07	73.36	125.08	115.24	3 25.6	4 6.1
21	0.862	7.60	43.69	1.05	72.97	105.40	95.56	4 46.6	5 27.0
23	0.863	7.52	43.49	1.03	72.58	85.72	75.87	6 7.5	6 48.0
25	0.864	7.44	43.29	1.01	72.21	66.02	56.16	7 28.5	8 9.0
27	0.865	7.36	43.08	0.99	71.85	46.31	36.45	8 49.6	9 30.1
29	0.866	7.28	42.87	0.97	71.50	26.59	16.72	10 10.7	10 51.2
Dec. 1	0.868	7.20	42.65	0.95	71.17	6.86	356.99	11 31.8	12 12.4
3	0.869	7.12	42.43	0.93	70.84	347.12	337.24	12 53.0	13 33.6
5	0.870	7.05	42.21	0.91	70.53	327.37	317.49	14 14.2	14 54.9
7	0.872	6.97	41.98	0.89	70.22	307.61	297.72	15 35.5	16 16.1
9	0.873	6.90	41.75	0.88	69.93	287.84	277.95	16 56.8	17 37.5
11	0.874	6.83	41.51	0.86	69.66	268.06	258.17	18 18.2	18 58.9
13	0.876	6.76	41.27	0.84	69.39	248.27	238.37	19 39.6	20 20.3
15	0.877	6.69	41.02	0.82	69.14	228.47	218.57	21 1.0	21 41.7
17	0.879	6.62	40.77	0.80	68.90	208.67	198.76	22 22.4	23 3.2
19	0.880	6.55	40.52	0.79	68.67	188.86	178.95	23 43.9	..
21	0.882	6.49	40.26	0.77	68.46	169.04	159.13	0 24.7	1 5.5
23	0.883	6.42	40.00	0.75	68.25	149.21	139.30	1 46.2	2 27.0
25	0.885	6.36	39.74	0.73	68.06	129.38	119.46	3 7.8	3 48.6
27	0.886	6.30	39.47	0.72	67.89	109.54	99.62	4 29.4	5 10.2
29	0.888	6.24	39.20	0.70	67.72	89.70	79.78	5 51.0	6 31.8
31	0.889	6.18	38.93	0.69	67.57	69.85	59.93	7 12.7	7 53.5

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER.

Midnight.	Light-Time.	Stellar Magnitude.	$P$	$A_{\oplus} + 180^{\circ}$	$D_{\oplus}$	$A_{\odot} + 180^{\circ}$	$D_{\odot}$
	m		$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$	$^{\circ}$
Jan. 1	45.49	-1.6	24.07	61.52	-2.70	51.19	-2.39
8	44.56	1.6	23.99	62.12	2.75	51.72	2.41
15	43.62	1.6	23.92	62.58	2.79	52.25	2.43
22	42.70	1.7	23.87	62.89	2.83	52.78	2.44
29	41.80	1.7	23.85	63.06	2.87	53.31	2.46
Feb. 5	40.94	-1.8	23.85	63.07	-2.90	53.84	-2.48
12	40.13	1.8	23.87	62.92	2.92	54.37	2.50
19	39.39	1.9	23.91	62.63	2.94	54.89	2.51
26	38.73	1.9	23.97	62.18	2.95	55.42	2.53
Mar. 5	38.17	1.9	24.05	61.61	2.96	55.95	2.54
12	37.71	-2.0	24.15	60.92	-2.96	56.48	-2.56
19	37.36	2.0	24.25	60.13	2.95	57.01	2.58
26	37.13	2.0	24.36	59.28	2.93	57.54	2.59
Apr. 2	37.02	2.0	24.46	58.39	2.91	58.07	2.61
9	37.04	2.0	24.57	57.49	2.88	58.60	2.62
16	37.18	-2.0	24.66	56.61	-2.85	59.13	-2.64
23	37.44	2.0	24.74	55.79	2.81	59.66	2.65
30	37.81	2.0	24.82	55.05	2.77	60.19	2.66
May 7	38.29	1.9	24.88	54.40	2.73	60.71	2.68
14	38.87	1.9	24.92	53.88	2.69	61.24	2.69
21	39.53	-1.9	24.96	53.50	-2.65	61.77	-2.70
28	40.26	1.8	24.98	53.25	2.61	62.30	2.72
June 4	41.05	1.8	24.99	53.15	2.58	62.83	2.73
11	41.89	1.7	24.98	53.20	2.55	63.36	2.74
18	42.76	1.7	24.97	53.39	2.52	63.89	2.76
25	43.65	-1.6	24.94	53.73	-2.50	64.42	-2.77
July 2	44.55	1.6	24.90	54.20	2.49	64.95	2.78
9	45.45	1.6	24.85	54.79	2.48	65.48	2.79
16	46.34	1.5	24.78	55.51	2.47	66.01	2.80
23	47.21	1.5	24.70	56.33	2.47	66.54	2.82
30	48.05	-1.4	24.60	57.26	-2.48	67.07	-2.83
Aug. 6	48.85	1.4	24.49	58.28	2.49	67.60	2.84
13	49.61	1.4	24.36	59.39	2.50	68.13	2.85
20	50.32	1.3	24.21	60.57	2.51	68.66	2.86
27	50.97	1.3	24.04	61.82	2.53	69.19	2.87
Sept. 3	51.55	-1.3	23.85	63.13	-2.55	69.72	-2.88
10	52.07	1.3	23.64	64.49	2.58	70.25	2.89
17	52.51	1.2	23.42	65.90	2.60	70.78	2.90
24	52.88	-1.2	23.17	67.35	-2.63	71.31	-2.91
..	..	..	..	..	..	..	..
Nov. 20	52.69	-1.2	20.51	79.62	-2.88	75.64	-2.97
27	52.27	1.3	20.13	81.07	2.92	76.17	2.98
Dec. 4	51.78	1.3	19.74	82.49	2.95	76.70	2.99
11	51.21	1.3	19.36	83.86	2.98	77.23	2.99
18	50.56	1.3	18.99	85.17	3.01	77.76	3.00
25	49.85	-1.4	18.62	86.41	-3.04	78.30	-3.01
32	49.08	-1.4	18.26	87.58	-3.07	78.83	-3.01

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER.

Midnight.	Equatorial Diameter.	Excess of Equat. Diam. over Polar.	$\delta$	$\varphi$	$Q$	Central Meridian.		Correction for Phase.
						System I.	System II.	
Jan. 1	35.97	2.39	10.32	0.29	292.58	245.07	148.82	+0.46
8	36.73	2.44	10.39	0.30	292.36	270.34	120.67	0.47
15	37.52	2.49	10.32	0.30	292.14	295.75	92.67	0.46
22	38.33	2.55	10.11	0.29	291.93	321.30	64.80	0.44
29	39.15	2.60	9.75	0.28	291.71	346.98	37.07	0.41
Feb. 5	39.97	2.66	9.23	0.26	291.48	12.80	9.47	+0.37
12	40.78	2.71	8.56	0.23	291.23	38.73	341.99	0.32
19	41.54	2.76	7.74	0.19	290.93	64.78	314.63	0.26
26	42.25	2.81	6.77	0.15	290.54	90.92	287.36	0.20
Mar. 5	42.87	2.85	5.66	0.10	289.99	117.14	260.17	0.14
12	43.40	2.88	4.45	0.06	289.13	143.42	233.03	+0.09
19	43.81	2.91	3.14	0.03	287.50	169.72	205.91	0.04
26	44.08	2.93	1.77	0.01	283.27	196.01	178.79	+0.01
Apr. 2	44.21	2.94	0.44	0.00	250.73	222.27	151.64	0.00
9	44.19	2.94	1.14	0.01	127.74	248.46	124.42	-0.01
16	44.02	2.92	2.52	0.02	119.42	274.55	97.10	-0.03
23	43.71	2.90	3.86	0.05	117.00	300.51	69.65	0.06
30	43.28	2.88	5.13	0.09	115.86	326.32	42.06	0.11
May 7	42.73	2.84	6.30	0.13	115.18	351.97	14.30	0.17
14	42.10	2.80	7.35	0.17	114.71	17.44	346.36	0.23
21	41.40	2.75	8.27	0.21	114.36	42.73	318.24	-0.30
28	40.65	2.70	9.04	0.25	114.08	67.83	289.94	0.36
June 4	39.87	2.65	9.67	0.28	113.85	92.74	261.45	0.41
11	39.07	2.60	10.15	0.30	113.64	117.49	232.79	0.45
18	38.27	2.54	10.49	0.32	113.45	142.06	203.96	0.48
25	37.49	2.49	10.68	0.33	113.28	166.48	174.97	-0.50
July 2	36.73	2.44	10.74	0.32	113.10	190.76	145.85	0.50
9	36.00	2.39	10.68	0.31	112.92	214.92	116.60	0.50
16	35.31	2.35	10.49	0.30	112.74	238.96	87.24	0.48
23	34.66	2.30	10.20	0.28	112.55	262.90	57.77	0.45
30	34.06	2.26	9.80	0.25	112.34	286.76	28.23	-0.42
Aug. 6	33.51	2.23	9.31	0.22	112.11	310.55	358.61	0.38
13	32.99	2.19	8.74	0.19	111.86	334.28	328.94	0.33
20	32.52	2.16	8.09	0.16	111.58	357.97	299.22	0.28
27	32.11	2.13	7.37	0.13	111.25	21.63	269.46	0.24
Sept. 3	31.74	2.11	6.59	0.10	110.87	45.26	239.69	-0.19
10	31.43	2.09	5.76	0.08	110.41	68.88	209.91	0.14
17	31.16	2.07	4.88	0.06	109.83	92.50	180.12	0.10
24	30.95	2.06	3.97	0.04	109.09	116.14	150.34	-0.07
..	..	..	..	..	..	..	..	..
Nov. 20	31.06	2.06	3.98	0.04	291.89	104.28	63.58	+0.07
27	31.30	2.08	4.90	0.06	291.00	128.38	34.26	0.11
Dec. 4	31.60	2.10	5.78	0.08	290.28	152.57	5.04	0.15
11	31.96	2.12	6.61	0.11	289.65	176.85	335.91	0.19
18	32.37	2.15	7.39	0.14	289.09	201.23	306.88	0.24
25	32.83	2.18	8.11	0.17	288.58	225.72	277.95	+0.29
32	33.34	2.21	8.74	0.20	288.10	250.32	249.14	+0.33

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER.  
SYSTEM I.

Transit of Zero Meridian.				Interval between Successive Transits.		Transit of Zero Meridian.				Interval between Successive Transits.	
	d	h	m				d	h	m		
Jan.	1	15	7.77	9	50.50	Mar.	22	14	4.85	9	50.41
	3	16	20.30				24	15	16.89		
	5	17	32.81				26	16	28.93		
	7	18	45.30				28	17	40.97		
	9	19	57.78				30	18	53.01		
	11	21	10.24	9	50.48	Apr.	1	20	5.06	9	50.42
	13	22	22.68				3	21	17.12		
	15	23	35.11				5	22	29.19		
	18	0	47.51				7	23	41.27		
	20	1	59.90				10	0	53.37		
	22	3	12.28	9	50.47	12	2	5.48	9	50.43	
	24	4	24.63			14	3	17.62			
	26	5	36.97			16	4	29.77			
	28	6	49.29			18	5	41.94			
	30	8	1.59			20	6	54.13			
Feb.	1	9	13.88	9	50.45	22	8	6.34	9	50.44	
	3	10	26.15			24	9	18.58			
	5	11	38.40			26	10	30.84			
	7	12	50.64			28	11	43.12			
	9	14	2.87			30	12	55.43			
	11	15	15.07	9	50.44	May	2	14	7.76	9	50.47
	13	16	27.26				4	15	20.11		
	15	17	39.44				6	16	32.49		
	17	18	51.61				8	17	44.90		
	19	20	3.76				10	18	57.32		
	21	21	15.89	9	50.42	12	20	9.79	9	50.49	
	23	22	28.02			14	21	22.28			
	25	23	40.13			16	22	34.79			
	28	0	52.23			18	23	47.32			
	Mar.	2	2			4.32	21	0			59.89
4		3	16.40	9	50.41	25	3	25.09			
6		4	28.48			27	4	37.73			
8		5	40.54			29	5	50.39			
10		6	52.60			31	7	3.08			
12		8	4.65			9	50.41	June	2	8	15.79
14		9	16.70	4	9				28.53		
16		10	28.74	6	10				41.29		
18		11	40.78	8	11				54.07		
20		12	52.81								

## EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER.

SYSTEM I.—*continued.*

Transit of Zero Meridian.			Interval between Successive Transits.		Transit of Zero Meridian.			Interval between Successive Transits.					
	d	h	m	h	m		d	h	m	h	m		
June	10	13	6.87	9	50.57	Aug.	29	12	38.18	9	50.66		
	12	14	19.70				31	13	51.46				
	14	15	32.55			Sept.	2	15	4.74				
	16	16	45.42				4	16	18.02				
	18	17	58.31				6	17	31.31				
	20	19	11.22			8	18	44.59	9			50.66	
	22	20	24.15			10	19	57.88					
	24	21	37.10			12	21	11.17					
	26	22	50.07			14	22	24.45					
	29	0	3.05			16	23	37.74					
July	1	1	16.05	9	50.60		19	0	51.03	9	50.66		
	3	2	29.07				21	2	4.31				
	5	3	42.10				23	3	17.60				
	7	4	55.15				25	4	30.88				
	9	6	8.22				27	5	44.16				
	11	7	21.29			..	..	..					
	13	8	34.38			Nov.	20	18	59.42			9	50.61
	15	9	47.49				22	20	12.49				
	17	11	0.61				24	21	25.55				
	19	12	13.74			26	22	38.60	9			50.60	
21	13	26.88	28	23	51.64								
23	14	40.04	Dec.	1	1	4.66							
25	15	53.20		3	2	17.67							
27	17	6.38		5	3	30.66							
29	18	19.57	7	4	43.64	9	50.58						
31	19	32.76	9	5	56.61								
Aug.	2	20	45.96	11	7			9.56					
	4	21	59.17	13	8	22.50							
	6	23	12.39	15	9	35.42							
	9	0	25.62	17	10	48.33	9	50.57					
	11	1	38.85	19	12	1.22							
13	2	52.09	21	13	14.10								
15	4	5.33	23	14	26.97								
17	5	18.58	25	15	39.82								
19	6	31.84	27	16	52.65	9	50.55						
21	7	45.10	29	18	5.47								
23	8	58.36	31	19	18.27								
25	10	11.63	33	20	31.05								
27	11	24.91											

EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER.  
SYSTEM II.

Transit of Zero Meridian.				Interval between Successive Transits.		Transit of Zero Meridian.				Interval between Successive Transits.		
	d	h	m				d	h	m			
Jan.	1	17	48.68	9	55.68	Mar.	23	9	35.10	9	55.58	
	3	19	27.09				25	11	13.01			
	5	21	5.49				27	12	50.93			
	7	22	43.88				29	14	28.85			
	10	0	22.24				31	16	6.78			
	12	2	0.58	9	55.66		Apr.	2	17	44.71	9	55.59
	14	3	38.91					4	19	22.65		
	16	5	17.22					6	21	0.60		
	18	6	55.51					8	22	38.57		
	20	8	33.79					11	0	16.55		
22	10	12.04	9	55.64		13	1	54.55	9	55.61		
24	11	50.28				15	3	32.57				
26	13	28.50				17	5	10.61				
28	15	6.70				19	6	48.67				
30	16	44.89				21	8	26.76				
Feb.	1	18	23.06	9	55.63		23	10	4.86	9	55.62	
	3	20	1.21				25	11	42.99			
	5	21	39.34				27	13	21.14			
	7	23	17.46				29	14	59.32			
	10	0	55.56			May	1	16	37.52			
12	2	33.65	9	55.61		3	18	15.75	9	55.65		
14	4	11.72				5	19	54.00				
16	5	49.78				7	21	32.28				
18	7	27.82				9	23	10.59				
20	9	5.85				12	0	48.92				
22	10	43.86	9	55.60		14	2	27.27	9	55.67		
24	12	21.86				16	4	5.66				
26	13	59.85				18	5	44.07				
28	15	37.83				20	7	22.51				
Mar.	2	17	15.80			22	9	0.97				
4	18	53.76	9	55.59		24	10	39.46	9	55.70		
6	20	31.71				26	12	17.98				
8	22	9.65				28	13	56.52				
10	23	47.58				30	15	35.09				
13	1	25.51			June	1	17	13.68				
15	3	3.43	9	55.58		3	18	52.30	9	55.72		
17	4	41.35				5	20	30.94				
19	6	19.27				7	22	9.61				
21	7	57.18				9	23	48.30				



EPHEMERIS FOR PHYSICAL OBSERVATIONS OF JUPITER.  
SYSTEM II.—*continued.*

Transit of Zero Meridian.			Interval between Successive Transits.		Transit of Zero Meridian.			Interval between Successive Transits.	
d	h	m	h	m	d	h	m	h	m
June 12	1	27.01	9	55.75	Aug. 31	17	48.59	9	55.84
14	3	5.74			Sept. 2	19	27.77		
16	4	44.49			4	21	6.95		
18	6	23.27			6	22	46.13		
20	8	2.06			9	0	25.31		
22	9	40.88	9	55.77	11	2	4.50	9	55.84
24	11	19.72			13	3	43.68		
26	12	58.57			15	5	22.87		
28	14	37.44			17	7	2.06		
30	16	16.33			19	8	41.24		
July 2	17	55.24	9	55.79	21	10	20.42	9	55.83
4	19	34.16			23	11	59.61		
6	21	13.10			25	13	38.79		
8	22	52.06			27	15	17.96		
11	0	31.03			29	16	57.14		
13	2	10.01	9	55.80	..				
15	3	49.01			Nov. 20	20	10.46	9	55.79
17	5	28.02			22	21	49.43		
19	7	7.05			24	23	28.39		
21	8	46.09			27	1	7.33	9	55.78
23	10	25.13	9	55.81	29	2	46.26		
25	12	4.19			Dec. 1	4	25.18		
27	13	43.26			3	6	4.08		
29	15	22.34			5	7	42.97		
31	17	1.43			7	9	21.85	9	55.76
Aug. 2	18	40.53	9	55.82	9	11	0.71		
4	20	19.64			11	12	39.55		
6	21	58.75			13	14	18.38		
8	23	37.87			15	15	57.20		
11	1	17.00			17	17	36.00	9	55.75
13	2	56.14	9	55.83	19	19	14.79		
15	4	35.28			21	20	53.56		
17	6	14.43			23	22	32.31		
19	7	53.58			26	0	11.05		
21	9	32.74			28	1	49.78	9	55.73
23	11	11.90	9	55.83	30	3	28.48		
25	12	51.07			32	5	7.18		
27	14	30.24			34	6	45.85		
29	16	9.41							

TABLES.

For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS of  
SIDEREAL Time.

HOURS.				MINUTES.				SECONDS.					
Hours of Mean Time.	Equivalents in Sidereal Time.			Minutes of Mean Time.	Equivalents in Sidereal Time.		Minutes of Mean Time.	Equivalents in Sidereal Time.		Seconds of Mean Time.	Equivalents in Sidereal Time.		
	h	m	s		m	s		m	s		s		s
1	1	0	9.8565	1	1	0.1643	31	31	5.0925	1	1.0027	31	31.0849
2	2	0	19.7130	2	2	0.3286	32	32	5.2568	2	2.0055	32	32.0876
3	3	0	29.5694	3	3	0.4928	33	33	5.4211	3	3.0082	33	33.0904
4	4	0	39.4259	4	4	0.6571	34	34	5.5853	4	4.0110	34	34.0931
5	5	0	49.2824	5	5	0.8214	35	35	5.7496	5	5.0137	35	35.0958
6	6	0	59.1388	6	6	0.9857	36	36	5.9139	6	6.0164	36	36.0986
7	7	1	8.9953	7	7	1.1499	37	37	6.0782	7	7.0192	37	37.1013
8	8	1	18.8518	8	8	1.3142	38	38	6.2424	8	8.0219	38	38.1040
9	9	1	28.7083	9	9	1.4785	39	39	6.4067	9	9.0246	39	39.1068
10	10	1	38.5647	10	10	1.6428	40	40	6.5710	10	10.0274	40	40.1095
11	11	1	48.4212	11	11	1.8070	41	41	6.7353	11	11.0301	41	41.1123
12	12	1	58.2777	12	12	1.9713	42	42	6.8995	12	12.0329	42	42.1150
13	13	2	8.1342	13	13	2.1356	43	43	7.0638	13	13.0356	43	43.1177
14	14	2	17.9906	14	14	2.2998	44	44	7.2281	14	14.0383	44	44.1205
15	15	2	27.8471	15	15	2.4641	45	45	7.3924	15	15.0411	45	45.1232
16	16	2	37.7036	16	16	2.6284	46	46	7.5566	16	16.0438	46	46.1259
17	17	2	47.5600	17	17	2.7927	47	47	7.7209	17	17.0465	47	47.1287
18	18	2	57.4165	18	18	2.9569	48	48	7.8852	18	18.0493	48	48.1314
19	19	3	7.2730	19	19	3.1212	49	49	8.0495	19	19.0520	49	49.1342
20	20	3	17.1295	20	20	3.2855	50	50	8.2137	20	20.0548	50	50.1369
21	21	3	26.9859	21	21	3.4498	51	51	8.3780	21	21.0575	51	51.1396
22	22	3	36.8424	22	22	3.6140	52	52	8.5423	22	22.0602	52	52.1424
23	23	3	46.6989	23	23	3.7783	53	53	8.7066	23	23.0630	53	53.1451
24	24	3	56.5554	24	24	3.9426	54	54	8.8708	24	24.0657	54	54.1479
				25	25	4.1069	55	55	9.0351	25	25.0685	55	55.1506
				26	26	4.2711	56	56	9.1994	26	26.0712	56	56.1533
				27	27	4.4354	57	57	9.3637	27	27.0739	57	57.1561
				28	28	4.5997	58	58	9.5279	28	28.0767	58	58.1588
				29	29	4.7640	59	59	9.6922	29	29.0794	59	59.1615
				30	30	4.9282	60	60	9.8565	30	30.0821	60	60.1643

For converting INTERVALS of MEAN SOLAR Time into Equivalent INTERVALS of  
SIDEREAL Time.

## FRACTIONS OF A SECOND.

Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.	Seconds of Mean Time.	Equivalents in Sidereal Time.
	s		s		s		s		s
0.01	0.01003	0.21	0.21057	0.41	0.41112	0.61	0.61167	0.81	0.81222
0.02	0.02006	0.22	0.22060	0.42	0.42115	0.62	0.62170	0.82	0.82225
0.03	0.03008	0.23	0.23063	0.43	0.43118	0.63	0.63173	0.83	0.83227
0.04	0.04011	0.24	0.24066	0.44	0.44120	0.64	0.64175	0.84	0.84230
0.05	0.05014	0.25	0.25068	0.45	0.45123	0.65	0.65178	0.85	0.85233
0.06	0.06016	0.26	0.26071	0.46	0.46126	0.66	0.66181	0.86	0.86235
0.07	0.07019	0.27	0.27074	0.47	0.47129	0.67	0.67183	0.87	0.87238
0.08	0.08022	0.28	0.28077	0.48	0.48131	0.68	0.68186	0.88	0.88241
0.09	0.09025	0.29	0.29079	0.49	0.49134	0.69	0.69189	0.89	0.89244
0.10	0.10027	0.30	0.30082	0.50	0.50137	0.70	0.70192	0.90	0.90246
0.11	0.11030	0.31	0.31085	0.51	0.51140	0.71	0.71194	0.91	0.91249
0.12	0.12033	0.32	0.32088	0.52	0.52142	0.72	0.72197	0.92	0.92252
0.13	0.13036	0.33	0.33090	0.53	0.53145	0.73	0.73200	0.93	0.93255
0.14	0.14038	0.34	0.34093	0.54	0.54148	0.74	0.74203	0.94	0.94257
0.15	0.15041	0.35	0.35096	0.55	0.55151	0.75	0.75205	0.95	0.95260
0.16	0.16044	0.36	0.36099	0.56	0.56153	0.76	0.76208	0.96	0.96263
0.17	0.17047	0.37	0.37101	0.57	0.57156	0.77	0.77211	0.97	0.97266
0.18	0.18049	0.38	0.38104	0.58	0.58159	0.78	0.78214	0.98	0.98268
0.19	0.19052	0.39	0.39107	0.59	0.59162	0.79	0.79216	0.99	0.99271
0.20	0.20055	0.40	0.40110	0.60	0.60164	0.80	0.80219	1.00	1.00274

Sidereal Time *required* = Sidereal Time at the *preceding* Mean Noon + the Equivalent to the *given* Mean Time.

EXAMPLE.—To convert  $2^{\text{h}} 25^{\text{m}} 18^{\text{s}}.96$  Mean Time at Greenwich, Jan. 20, 1922, into Sidereal Time.

Sidereal Time at the <i>preceding</i> Mean Noon, viz., January 20 .		h m s	
		19 56 19.58	
For Mean Intervals {	$2^{\text{h}}$	2	0 19.713
	$25^{\text{m}}$	25	4.107
	18		18.049
	0.96		0.963
The Sum is the Sidereal Time required		22 22 24.1	

For converting INTERVALS of SIDEREAL Time into Equivalent INTERVALS of  
MEAN SOLAR Time.

HOURS.			MINUTES.				SECONDS.				
Hours of Sidereal Time.	Equivalents in Mean Time.		Minutes of Sidereal Time.	Equivalents in Mean Time.		Minutes of Sidereal Time.	Equivalents in Mean Time.		Seconds of Sidereal Time.	Equivalents in Mean Time.	
	h	m s		m s		m s		s		s	
1	0	59 50·1704	1	0 59·8362	31	30 54·9214	1	0·9973	31	30·9154	
2	1	59 40·3409	2	1 59·6723	32	31 54·7576	2	1·9945	32	31·9126	
3	2	59 30·5113	3	2 59·5085	33	32 54·5937	3	2·9918	33	32·9099	
4	3	59 20·6818	4	3 59·3447	34	33 54·4299	4	3·9891	34	33·9072	
5	4	59 10·8522	5	4 59·1809	35	34 54·2661	5	4·9864	35	34·9045	
6	5	59 1·0226	6	5 59·0170	36	35 54·1023	6	5·9836	36	35·9017	
7	6	58 51·1931	7	6 58·8532	37	36 53·9384	7	6·9809	37	36·8990	
8	7	58 41·3635	8	7 58·6894	38	37 53·7746	8	7·9782	38	37·8963	
9	8	58 31·5340	9	8 58·5256	39	38 53·6108	9	8·9754	39	38·8935	
10	9	58 21·7044	10	9 58·3617	40	39 53·4470	10	9·9727	40	39·8908	
11	10	58 11·8748	11	10 58·1979	41	40 53·2831	11	10·9700	41	40·8881	
12	11	58 2·0453	12	11 58·0341	42	41 53·1193	12	11·9672	42	41·8853	
13	12	57 52·2157	13	12 57·8703	43	42 52·9555	13	12·9645	43	42·8826	
14	13	57 42·3862	14	13 57·7064	44	43 52·7917	14	13·9618	44	43·8799	
15	14	57 32·5566	15	14 57·5426	45	44 52·6278	15	14·9591	45	44·8772	
16	15	57 22·7270	16	15 57·3788	46	45 52·4640	16	15·9563	46	45·8744	
17	16	57 12·8975	17	16 57·2150	47	46 52·3002	17	16·9536	47	46·8717	
18	17	57 3·0679	18	17 57·0511	48	47 52·1364	18	17·9509	48	47·8690	
19	18	56 53·2384	19	18 56·8873	49	48 51·9725	19	18·9481	49	48·8662	
20	19	56 43·4088	20	19 56·7235	50	49 51·8087	20	19·9454	50	49·8635	
21	20	56 33·5792	21	20 56·5597	51	50 51·6449	21	20·9427	51	50·8608	
22	21	56 23·7497	22	21 56·3958	52	51 51·4810	22	21·9399	52	51·8580	
23	22	56 13·9201	23	22 56·2320	53	52 51·3172	23	22·9372	53	52·8553	
24	23	56 4·0906	24	23 56·0682	54	53 51·1534	24	23·9345	54	53·8526	
			25	24 55·9044	55	54 50·9896	25	24·9318	55	54·8499	
			26	25 55·7405	56	55 50·8257	26	25·9290	56	55·8471	
			27	26 55·5767	57	56 50·6619	27	26·9263	57	56·8444	
			28	27 55·4129	58	57 50·4981	28	27·9236	58	57·8417	
			29	28 55·2490	59	58 50·3343	29	28·9208	59	58·8389	
			30	29 55·0852	60	59 50·1704	30	29·9181	60	59·8362	

For converting INTERVALS of SIDEREAL Time into Equivalent INTERVALS of  
MEAN SOLAR Time.

## FRACTIONS OF A SECOND.

Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.	Seconds of Sidereal Time.	Equivalents in Mean Time.
0.01	s 0.00997	0.21	s 0.20943	0.41	s 0.40888	0.61	s 0.60833	0.81	s 0.80779
0.02	0.01995	0.22	0.21940	0.42	0.41885	0.62	0.61831	0.82	0.81776
0.03	0.02992	0.23	0.22937	0.43	0.42883	0.63	0.62828	0.83	0.82773
0.04	0.03989	0.24	0.23934	0.44	0.43880	0.64	0.63825	0.84	0.83771
0.05	0.04986	0.25	0.24932	0.45	0.44877	0.65	0.64823	0.85	0.84768
0.06	0.05984	0.26	0.25929	0.46	0.45874	0.66	0.65820	0.86	0.85765
0.07	0.06981	0.27	0.26926	0.47	0.46872	0.67	0.66817	0.87	0.86762
0.08	0.07978	0.28	0.27924	0.48	0.47869	0.68	0.67814	0.88	0.87760
0.09	0.08975	0.29	0.28921	0.49	0.48866	0.69	0.68812	0.89	0.88757
0.10	0.09973	0.30	0.29918	0.50	0.49864	0.70	0.69809	0.90	0.89754
0.11	0.10970	0.31	0.30915	0.51	0.50861	0.71	0.70806	0.91	0.90752
0.12	0.11967	0.32	0.31913	0.52	0.51858	0.72	0.71803	0.92	0.91749
0.13	0.12965	0.33	0.32910	0.53	0.52855	0.73	0.72801	0.93	0.92746
0.14	0.13962	0.34	0.33907	0.54	0.53853	0.74	0.73798	0.94	0.93743
0.15	0.14959	0.35	0.34904	0.55	0.54850	0.75	0.74795	0.95	0.94741
0.16	0.15956	0.36	0.35902	0.56	0.55847	0.76	0.75793	0.96	0.95738
0.17	0.16954	0.37	0.36899	0.57	0.56844	0.77	0.76790	0.97	0.96735
0.18	0.17951	0.38	0.37896	0.58	0.57842	0.78	0.77787	0.98	0.97732
0.19	0.18948	0.39	0.38894	0.59	0.58839	0.79	0.78784	0.99	0.98730
0.20	0.19945	0.40	0.39891	0.60	0.59836	0.80	0.79782	1.00	0.99727

Mean Solar Time *required* = Mean Time at the *preceding* Sidereal Noon (Mean Time of Transit of the First Point of Aries, page III) + the Equivalent to the *given* Sidereal Time.

EXAMPLE.—To convert  $22^{\text{h}} 22^{\text{m}} 2^{\text{s}}.41$  Sidereal Time at Greenwich, Jan. 20, 1922, into Mean Time.

Mean Time at the <i>preceding</i> Sidereal Noon, viz., January 19			h	m	s
			4	6	56.41
For Sidereal Intervals	{	$22^{\text{h}} 0^{\text{m}} 0^{\text{s}}$	21	56	23.750
		22 0	21	56.396	
		2		1.995	
		0.41		0.409	
The Sum is the Mean Time required, Jan. 20			2	25	18.96

DAY AND FRACTION OF THE YEAR FROM MEAN NOON  
OF JAN. 1.

Day of the Month.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*
1	0	·0000	31	·0849	59	·1615	90	·2464	120	·3285	151	·4134
2	1	·0027	32	·0876	60	·1643	91	·2492	121	·3313	152	·4162
3	2	·0055	33	·0904	61	·1670	92	·2519	122	·3340	153	·4189
4	3	·0082	34	·0931	62	·1698	93	·2546	123	·3368	154	·4216
5	4	·0110	35	·0958	63	·1725	94	·2574	124	·3395	155	·4244
6	5	·0137	36	·0986	64	·1752	95	·2601	125	·3422	156	·4271
7	6	·0164	37	·1013	65	·1780	96	·2628	126	·3450	157	·4299
8	7	·0192	38	·1040	66	·1807	97	·2656	127	·3477	158	·4326
9	8	·0219	39	·1068	67	·1834	98	·2683	128	·3504	159	·4353
10	9	·0246	40	·1095	68	·1862	99	·2711	129	·3532	160	·4381
11	10	·0274	41	·1123	69	·1889	100	·2738	130	·3559	161	·4408
12	11	·0301	42	·1150	70	·1917	101	·2765	131	·3587	162	·4435
13	12	·0329	43	·1177	71	·1944	102	·2793	132	·3614	163	·4463
14	13	·0356	44	·1205	72	·1971	103	·2820	133	·3641	164	·4490
15	14	·0383	45	·1232	73	·1999	104	·2847	134	·3669	165	·4518
16	15	·0411	46	·1259	74	·2026	105	·2875	135	·3696	166	·4545
17	16	·0438	47	·1287	75	·2053	106	·2902	136	·3724	167	·4572
18	17	·0465	48	·1314	76	·2081	107	·2930	137	·3751	168	·4600
19	18	·0493	49	·1342	77	·2108	108	·2957	138	·3778	169	·4627
20	19	·0520	50	·1369	78	·2136	109	·2984	139	·3806	170	·4654
21	20	·0548	51	·1396	79	·2163	110	·3012	140	·3833	171	·4682
22	21	·0575	52	·1424	80	·2190	111	·3039	141	·3860	172	·4709
23	22	·0602	53	·1451	81	·2218	112	·3066	142	·3888	173	·4737
24	23	·0630	54	·1478	82	·2245	113	·3094	143	·3915	174	·4764
25	24	·0657	55	·1506	83	·2272	114	·3121	144	·3943	175	·4791
26	25	·0684	56	·1533	84	·2300	115	·3149	145	·3970	176	·4819
27	26	·0712	57	·1561	85	·2327	116	·3176	146	·3997	177	·4846
28	27	·0739	58	·1588	86	·2355	117	·3203	147	·4025	178	·4873
29	28	·0767			87	·2382	118	·3231	148	·4052	179	·4901
30	29	·0794			88	·2409	119	·3258	149	·4079	180	·4928
31	30	·0821			89	·2437			150	·4107		

\* Add ·0010 if Fraction of the Year be required from the time when the Sun's Mean Longitude is 280°.

## DAY AND FRACTION OF THE YEAR FROM MEAN NOON OF JAN. 1.

Day of the Month.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*	Day of the Year.	Fraction of the Year.*
1	181	·4956	212	·5804	243	·6653	273	·7474	304	·8323	334	·9145
2	182	·4983	213	·5832	244	·6681	274	·7502	305	·8351	335	·9172
3	183	·5010	214	·5859	245	·6708	275	·7529	306	·8378	336	·9199
4	184	·5038	215	·5887	246	·6735	276	·7557	307	·8405	337	·9227
5	185	·5065	216	·5914	247	·6763	277	·7584	308	·8433	338	·9254
6	186	·5093	217	·5941	248	·6790	278	·7611	309	·8460	339	·9282
7	187	·5120	218	·5969	249	·6817	279	·7639	310	·8488	340	·9309
8	188	·5147	219	·5996	250	·6845	280	·7666	311	·8515	341	·9336
9	189	·5175	220	·6023	251	·6872	281	·7694	312	·8542	342	·9364
10	190	·5202	221	·6051	252	·6900	282	·7721	313	·8570	343	·9391
11	191	·5229	222	·6078	253	·6927	283	·7748	314	·8597	344	·9418
12	192	·5257	223	·6106	254	·6954	284	·7776	315	·8624	345	·9446
13	193	·5284	224	·6133	255	·6982	285	·7803	316	·8652	346	·9473
14	194	·5312	225	·6160	256	·7009	286	·7830	317	·8679	347	·9501
15	195	·5339	226	·6188	257	·7036	287	·7858	318	·8707	348	·9528
16	196	·5366	227	·6215	258	·7064	288	·7885	319	·8734	349	·9555
17	197	·5394	228	·6242	259	·7091	289	·7913	320	·8761	350	·9583
18	198	·5421	229	·6270	260	·7119	290	·7940	321	·8789	351	·9610
19	199	·5448	230	·6297	261	·7146	291	·7967	322	·8816	352	·9637
20	200	·5476	231	·6325	262	·7173	292	·7995	323	·8843	353	·9665
21	201	·5503	232	·6352	263	·7201	293	·8022	324	·8871	354	·9692
22	202	·5531	233	·6379	264	·7228	294	·8049	325	·8898	355	·9720
23	203	·5558	234	·6407	265	·7255	295	·8077	326	·8926	356	·9747
24	204	·5585	235	·6434	266	·7283	296	·8104	327	·8953	357	·9774
25	205	·5613	236	·6461	267	·7310	297	·8132	328	·8980	358	·9802
26	206	·5640	237	·6489	268	·7338	298	·8159	329	·9008	359	·9829
27	207	·5667	238	·6516	269	·7365	299	·8186	330	·9035	360	·9856
28	208	·5695	239	·6544	270	·7392	300	·8214	331	·9062	361	·9884
29	209	·5722	240	·6571	271	·7420	301	·8241	332	·9090	362	·9911
30	210	·5750	241	·6598	272	·7447	302	·8268	333	·9117	363	·9939
31	211	·5777	242	·6626			303	·8296			364	·9966

\*Add ·0010 if Fraction of the Year be required from the time when the Sun's Mean Longitude is 280°.

Days elapsed at Mean Noon of Jan. 1 of each year of the Table.											Days elapsed at Mean Noon.	
A.D.	0	200	400	600	800	1000	1200	1400	1600	1800	Date.	1922.
	I7	I7	I8	I9	20	20	2I	22	23	23		
0	21058	94108	67158	40208	13258	86308	59358	32408	05448	78497*		
4	22519	95569	68619	41669	14719	87769	60819	33869	06909	79957	Jan. 1	2423
8	23980	97030	70080	43130	16180	89230	62280	35330	08370	81418	11	056
12	25441	98491	71541	44591	17641	90691	63741	36791	09831	82879	21	066
16	26902	99952	73002	46052	19102	92152	65202	38252	11292	84340	31	076
20	28363	01413	74463	47513	20563	93613	66663	39713	12753	85801	31	086
24	29824	02874	75924	48974	22024	95074	68124	41174	14214	87262	Feb. 10	096
28	31285	04335	77385	50435	23485	96535	69585	42635	15675	88723	20	106
32	32746	05796	78846	51896	24946	97996	71046	44096	17136	90184	Mar. 2	116
36	34207	07257	80307	53357	26407	99457	72507	45557	18597	91645	12	126
40	35668	08718	81768	54818	27868	00918	73968	47018	20058	93106	22	136
44	37129	10179	83229	56279	29329	02379	75429	48479	21519	94567	Apr. 1	146
48	38590	11640	84690	57740	30790	03840	76890	49940	22980	96028	11	156
52	40051	13101	86151	59201	32251	05301	78351	51401	24441	97489	21	166
56	41512	14562	87612	60662	33712	06762	79812	52862	25902	98950		
60	42973	16023	89073	62123	35173	08223	81273	54323	27363	00411	May 1	176
64	44434	17484	90534	63584	36634	09684	82734	55784	28824	01872	11	186
68	45895	18945	91995	65045	38095	11145	84195	57245	30285	03333	21	196
72	47356	20406	93456	66506	39556	12606	85656	58706	31746	04794	31	206
76	48817	21867	94917	67967	41017	14067	87117	60167	33207	06255	June 10	216
80	50278	23328	96378	69428	42478	15528	88578	61628	34668	07716	20	226
84	51739	24789	97839	70889	43939	16989	90039	63089	36129	09177	30	236
88	53200	26250	99300	72350	45400	18450	91500	64550	37590	10638	July 10	246
92	54661	27711	00761	73811	46861	19911	92961	66011	39051	12099	20	256
96	56122	29172	02222	75272	48322	21372	94422	67472	40512	13560	30	266
100	57583	30633	03683	76733	49783	22833	95883	68933	41973*	15021*	Aug. 9	276
104	59044	32094	05144	78194	51244	24294	97344	70394	43433	16481	19	286
108	60505	33555	06605	79655	52705	25755	98805	71855	44894	17942		
112	61966	35016	08066	81116	54166	27216	00266	73316	46355	19403	29	296
116	63427	36477	09527	82577	55627	28677	01727	74777	47816	20864	Sept. 8	306
120	64888	37938	10988	84038	57088	30138	03188	76238	49277	22325	18	316
124	66349	39399	12449	85499	58549	31599	04649	77699	50738	23786	28	326
128	67810	40860	13910	86960	60010	33060	06110	79160	52199	25247	Oct. 8	336
132	69271	42321	15371	88421	61471	34521	07571	80621	53660	26708	18	346
136	70732	43782	16832	89882	62932	35982	09032	82082	55121	28169	28	356
140	72193	45243	18293	91343	64393	37443	10493	83543	56582	29630	Nov. 7	366
144	73654	46704	19754	92804	65854	38904	11954	85004	58043	31091		
148	75115	48165	21215	94265	67315	40365	13415	86465	59504	32552	17	376
152	76576	49626	22676	95726	68776	41826	14876	87926	60965	34013	27	386
156	78037	51087	24137	97187	70237	43287	16337	89387	62426	35474	Dec. 7	396
160	79498	52548	25598	98648	71698	44748	17798	90848	63887	36935	17	406
164	80959	54009	27059	00109	73159	46209	19259	92309	65348	38396		
168	82420	55470	28520	01570	74620	47670	20720	93770	66809	39857	27	416
172	83881	56931	29981	03031	76081	49131	22181	95231	68270	41318	37	426
176	85342	58392	31442	04492	77542	50592	23642	96692	69731	42779		
180	86803	59853	32903	05953	79003	52053	25103	98153	71192	44240	A.D.	Days.
184	88264	61314	34364	07414	80464	53514	26564	99604	72653	45701	1580	2298153
188	89725	62775	35825	08875	81925	54975	28025	01065	74114	47162	1581	8519
192	91186	64236	37286	10336	83386	56436	29486	02526	75575	48623	1582	8884
196	92647	65697	38747	11797	84847	57897	30947	03987	77036	50084	1583	9239
	I7	I8	I9	20	20	2I	22	23	23	24	1584	9604

\* denotes a common year.



FOR COMPUTING the GEOCENTRIC CO-ORDINATES of a PLACE.

$\phi$	log. X.	log. Y.	$\phi$	log. X.	log. Y.
0	diff.	diff.	0	diff.	diff.
1	9.9970705	0.0000000	1	9.9976745	0.0006040
2	9.9970709	0.0000004	2	9.9976997	0.0006292
3	9.9970723	0.0000018	3	9.9977251	0.0006546
4	9.9970745	0.0000040	4	9.9977506	0.0006801
5	9.9970776	0.0000071	5	9.9977761	0.0007056
6	9.9970816	0.0000111	6	9.9978016	0.0007311
7	9.9970865	0.0000160	7	9.9978272	0.0007567
8	9.9970922	0.0000217	8	9.9978527	0.0007822
9	9.9970988	0.0000283	9	9.9978782	0.0008077
10	9.9971062	0.0000357	10	9.9979036	0.0008331
11	9.9971145	0.0000440	11	9.9979288	0.0008583
12	9.9971237	0.0000532	12	9.9979540	0.0008835
13	9.9971336	0.0000631	13	9.9979789	0.0009084
14	9.9971444	0.0000739	14	9.9980036	0.0009331
15	9.9971560	0.0000855	15	9.9980281	0.0009576
16	9.9971683	0.0000978	16	9.9980523	0.0009818
17	9.9971814	0.0001109	17	9.9980762	0.0010057
18	9.9971953	0.0001248	18	9.9980997	0.0010292
19	9.9972099	0.0001394	19	9.9981229	0.0010524
20	9.9972253	0.0001548	20	9.9981457	0.0010752
21	9.9972413	0.0001708	21	9.9981681	0.0010976
22	9.9972581	0.0001876	22	9.9981901	0.0011196
23	9.9972755	0.0002050	23	9.9982116	0.0011411
24	9.9972935	0.0002230	24	9.9982325	0.0011620
25	9.9973122	0.0002417	25	9.9982530	0.0011825
26	9.9973314	0.0002609	26	9.9982729	0.0012024
27	9.9973512	0.0002807	27	9.9982922	0.0012217
28	9.9973716	0.0003011	28	9.9983110	0.0012405
29	9.9973925	0.0003220	29	9.9983291	0.0012586
30	9.9974139	0.0003434	30	9.9983466	0.0012761
31	9.9974358	0.0003653	31	9.9983634	0.0012929
32	9.9974581	0.0003876	32	9.9983795	0.0013090
33	9.9974808	0.0004103	33	9.9983949	0.0013244
34	9.9975040	0.0004335	34	9.9984096	0.0013391
35	9.9975275	0.0004570	35	9.9984236	0.0013531
36	9.9975513	0.0004808	36	9.9984368	0.0013663
37	9.9975754	0.0005049	37	9.9984492	0.0013787
38	9.9975999	0.0005294	38	9.9984609	0.0013904
39	9.9976245	0.0005540	39	9.9984717	0.0014012
40	9.9976494	0.0005789	40	9.9984817	0.0014112
± 40	9.9976745	0.0006040	± 80	9.9984909	0.0014204

Let  $\phi'$  and  $\rho$  be the geocentric latitude and radius of the place,  $\phi$  being the geographical latitude, then:—

$$\begin{aligned}\rho \sin \phi' &= X \sin \phi. \\ \rho \cos \phi' &= Y \cos \phi.\end{aligned}$$

\* \* \* The Longitudes are reckoned from the Meridian of Greenwich.

No.	Place and Altitude.	Longitude.	Latitude.	Reduction to Geocentric Latitude.
		h m s		
1	ADELAIDE, 141 ft. - - - - -	9 14 20.30 E.	34 55 38.5 S.	+ 10 52.4
2	ALBANY, U.S.A., 220 ft. - - - - -	4 55 6.8 W.	42 39 12.7 N.	- 11 33.1
3	ALGIERS, 1123 ft. - - - - -	0 12 8.38 E.	36 47 50 N.	- 11 6.7
4	ALLEGHENY, 1145 ft. - - - - -	5 20 2.93 W.	40 27 41.6 N.	- 11 26.6
5	AMHERST, U.S.A., (New Obs.), 363 ft. -	4 50 5.93 W.	42 21 56.5 N.	- 11 32.5
6	ANN-ARBOR, Mich., 926 ft. . - - - -	5 34 55.27 W.	42 16 48.7 N.	- 11 32.3
7	AREQUIPA, 8041 ft. - - - - -	4 46 11.73 W.	16 22 28.0 S.	+ 6 15.2
8	ARMAGH, 200 ft. - - - - -	0 26 35.4 W.	54 21 12.7 N.	- 10 59.6
9	ATHENS, 351 ft. - - - - -	1 34 52.92 E.	37 58 19.7 N.	- 11 14.3
10	BAMBERG, 984 ft. - - - - -	0 43 33.57 E.	49 53 6.0 N.	- 11 26.0
11	BERLIN, 154 ft. - - - - -	0 53 34.80 E.	52 30 16.7 N.	- 11 12.5
12	BESANÇON, 1024 ft. - - - - -	0 23 57.1 E.	47 14 59.0 N.	- 11 33.7
13	BIRR CASTLE (Earl of Rosse), 184 ft. - -	0 31 40.9 W.	53 54 7 N.	- 11 8.7
14	BOLOGNA, 275 ft. - - - - -	0 45 24.48 E.	44 29 54 N.	- 11 35.5
15	BOMBAY (Colaba), 63 ft. . - - - - -	4 51 15.15 E.	18 53 36.2 N.	- 7 5.1
16	BONN, 203 ft. - - - - -	0 28 23.17 E.	50 43 45.0 N.	- 11 22.3
17	BORDEAUX, 240 ft. - - - - -	0 2 5.51 W.	44 50 7.3 N.	- 11 35.6
18	BRESLAU, 482 ft. - - - - -	1 8 8.72 E.	51 6 55.8 N.	- 11 20.4
19	BRISBANE - - - - -	10 12 6.40 E.	27 28 0.0 S.	+ 9 28.3
20	BRUSSELS (UCCLE), 328 ft. - - - - -	0 17 26.05 E.	50 47 55.5 N.	- 11 21.9
21	BUDA PESTH - - - - -	1 16 13.7 E.	47 28 49 N.	- 11 33.3
22	CAMBRIDGE, 92 ft. - - - - -	0 0 22.75 E.	52 12 51.6 N.	- 11 14.3
23	CAMBRIDGE, U.S.A., Harvard Coll. Obs.,	4 44 31.05 W.	42 22 47.6 N.	- 11 32.5
24	CAPE OF GOOD HOPE, 42 ft. - - [79 ft.	1 13 54.76 E.	33 56 3.5 S.	+ 10 43.6
25	CATANIA, 154 ft. - - - - -	1 0 20.6 E.	37 30 13.3 N.	- 11 11.4
26	CHARKOW, 451 ft. - - - - -	2 24 55.77 E.	50 0 9.6 N.	- 11 25.5
27	CHARLOTTESVILLE, Va., Leander McCor-	5 14 5.22 W.	38 2 1.2 N.	- 11 14.7
28	CHRISTIANIA, 82 ft. - [mick Obs., 820 ft.	0 42 53.50 E.	59 54 44.0 N.	- 10 4.5
29	CINCINNATI, 863 ft. - - - - -	5 37 41.29 W.	39 8 19.5 N.	- 11 20.7
30	CLEVELAND, OHIO, Case Obs., 696 ft. -	5 26 25.82 W.	41 30 14.5 N.	- 11 30.2
31	CLINTON, U.S.A., Hamilton Coll., 906 ft.	5 1 37.45 W.	43 3 17.0 N.	- 11 33.9
32	COIMBRA, 325 ft. - - - - -	0 33 43.1 W.	40 12 24.5 N.	- 11 25.6
33	COPENHAGEN, 46 ft. - - - - -	0 50 18.69 E.	55 41 12.6 N.	- 10 48.6
34	CORDOBA, 1440 ft. - - - - -	4 16 48.22 W.	31 25 15.5 S.	+ 10 18.0
35	CRACOW, 725 ft. - - - - -	1 19 50.27 E.	50 3 51.9 N.	- 11 25.2
36	DEHRA DÛN, 2236 ft. - - - - -	5 12 13.47 E.	30 18 51.8 N.	- 10 5.2
37	DORPAT, 215 ft. - - - - -	1 46 53.22 E.	58 22 46.8 N.	- 10 22.1
38	DUBLIN (DUNSKIN), 283 ft. - - - - -	0 25 21.1 W.	53 23 13.1 N.	- 11 6.7
39	DURHAM, 351 ft. - - - - -	0 6 19.75 W.	54 46 6.2 N.	- 10 56.4
40	DÜSSELDORF, 85 ft. - - - - -	0 27 5.0 E.	51 12 25.0 N.	- 11 19.9

\* \* The Longitudes are reckoned from the Meridian of Greenwich.

No.	Log. p.	Authority for Longitude.	Authority for Latitude.
1	9.999524	Tel. Determination by Ellery, Russell and Todd.	Adelaide Astronomical Obs.
2	9.999331	<i>Astronomical Journal</i> , No. 334.	<i>Astronomical Journal</i> , No. 334.
3	9.999478	Albrecht's <i>Compensation</i> .	Triangulation by Trépied.
4	9.999387	U.S. Coast and Geodetic Survey.	Zenith Telescope Observations.
5	9.999339	Communicated by Prof. Todd.	Communicated by Prof. Todd.
6	9.999341	Publications of Obs., Vol. I., 1915.	Publications of Obs., Vol. I., 1915.
7	9.999885	<i>Harvard Annals</i> , 1903.	<i>Harvard Annals</i> , 1903.
8	9.999036	Armagh Catalogue of Stars, 1840.	Armagh Catalogue of Stars, 1840.
9	9.999449	Determination by Hartl.	<i>Annals</i> , Vol. VI., 1912.
10	9.999147	Albrecht's <i>Compensation</i> .	Communicated by Dr. Hartwig.
11	9.999082	Albrecht's <i>Compensation</i> .	<i>Beobachtungs-Ergebnisse</i> , Heft 3.
12	9.999214	Telegraphic connection with Paris.	Meridian Observations.
13	9.999067	Ordnance Survey.	Ordnance Survey.
14	9.999284	Albrecht's <i>Compensation</i> .	Determination by Respighi.
15	9.999848	Great Trigonometrical Survey of India.	Great Trigonometrical Survey of India.
16	9.999127	Albrecht's <i>Compensation</i> .	Communicated by Prof. Küstner.
17	9.999275	Telegraphic connection with Paris.	Zenith Distances of Fundamental Stars.
18	9.999116	Albrecht's <i>Compensation</i> .	Geodätisches Institut of Berlin.
19	9.999690	Telegraphic connection with Sydney.	Zenith Telescope Observations.
20	9.999124	<i>Annuaire Astronomique</i> , 1919.	<i>Annuaire Astronomique</i> , 1919.
21	9.999208	Berliner Jahrbuch.	Berliner Jahrbuch.
22	9.999089	Cambridge Observations.	Cambridge Observations.
23	9.999338	U.S. Coast and Geodetic Survey.	<i>Annals of the Observatory</i> , Vol. XVII.
24	9.999547	<i>Annals of Cape Observatory</i> , Vol. I., part 2.	Cape General Catalogue of Stars, 1885.
25	9.999461	Determination by Zona and Ricco.	Determination by Zona.
26	9.999144	Communicated by Prof. Lewitzky.	Communicated by Prof. Lewitzky.
27	9.999448	<i>Publications of Observatory</i> , Vol. I., part 1.	<i>Publications of Observatory</i> , Vol. I., part 1.
28	9.998906	Albrecht's <i>Compensation</i> .	<i>Astron. Nachrichten</i> , No. 3193.
29	9.999420	U.S. Coast and Geodetic Survey.	U.S. Coast and Geodetic Survey.
30	9.999361	Communicated by Prof. Howe.	Communicated by Prof. Howe.
31	9.999321	The American Ephemeris.	The American Ephemeris.
32	9.999394	Ephemerides <i>Astron. de Coimbra</i> , 1889.	Ephemerides <i>Astron. de Coimbra</i> , 1889.
33	9.999004	Albrecht's <i>Compensation</i> .	Communicated by Prof. Strömgren.
34	9.999605	Observatory and U.S. Naval Expeditions.	Meridian Observations of Circumpolar Stars.
35	9.999143	Albrecht's <i>Compensation</i> .	Austrian Gradmessungen-Commission.
36	9.999629	Great Trigonometrical Survey of India.	Great Trigonometrical Survey of India.
37	9.998941	Albrecht's <i>Compensation</i> .	Determination by Schwarz.
38	9.999060	<i>Transactions Royal Irish Academy</i> , 1838.	<i>Transactions Royal Dublin Society</i> , Vol. IV.
39	9.999026	Transport of Chronometers.	Meridian Observations of Circumpolar Stars.
40	9.999114	<i>Astron. Nachrichten</i> , No. 643.	<i>Astron. Nachrichten</i> , No. 643.

## OBSERVATORIES.

\* \* The Longitudes are reckoned from the Meridian of Greenwich.

No.	Place and Altitude.	Longitude.	Latitude.	Reduction to Geocentric Latitude.
		h m s		
41	EDINBURGH (Blackford Hill), 441 ft. -	0 12 44.2 W.	55 55 30.0 N.	-10 46.5
42	EVANSTON, Ill., Dearborn Obs., 574 ft. -	5 50 42.3 W.	42 33 34 N.	-11 31.8
43	FLAGSTAFF, ARIZONA, (Mr. Lowell),	7 26 44.58 W.	35 12 30.5 N.	-10 54.7
44	FLORENCE, Arcetri, 604 ft. - - [7250 ft.	0 45 1.30 E.	43 45 14.6 N.	-11 34.9
45	GENEVA, 1335 ft. - - - - -	0 24 36.61 E.	46 11 59.3 N.	-11 35.2
46	GEORGETOWN COLL., D.C., U.S.A., 151 ft.	5 8 18.24 W.	38 54 26.0 N.	-11 19.5
47	GLASGOW, 180 ft. - - - - -	0 17 10.55 W.	55 52 42.1 N.	-10 46.9
48	GLASGOW, U.S.A., Morrison Obs., 748 ft. -	6 11 18.08 W.	39 13 45.6 N.	-11 21.1
49	GOtha, 1083 ft. - - - - -	0 42 50.44 E.	50 56 37.9 N.	-11 21.1
50	GÖTTINGEN, 532 ft. - - - - -	0 39 46.22 E.	51 31 48.2 N.	-11 18.2
51	GREENWICH, 154 ft. - - - - -	0 0 0	51 28 38.1 N.	-11 18.5
52	HAMBURG (Bergedorf), 131 ft. - - - -	0 40 57.74 E.	53 28 46.7 N.	-11 6.1
53	HAVERFORD COLLEGE, Pa. - - - - -	5 1 12.70 W.	40 0 40.1 N.	-11 24.7
54	HEIDELBERG, 1870 ft. - - - - -	0 34 53.13 E.	49 23 54.9 N.	-11 27.8
55	HELSINGFORS, 125 ft. - - - - -	1 39 49.10 E.	60 9 42.3 N.	-10 1.5
56	HELWAN, 390 ft. - - - - -	2 5 22 E.	29 51 33 N.	- 9 59.7
57	HERÉNY (Herr von Gothard), 751 ft. -	1 6 24.7 E.	47 15 47.4 N.	-11 33.7
58	HONG KONG, 112 ft. - - - - -	7 36 41.86 E.	22 18 13.2 N.	- 8 7.4
59	HYDERABAD, Nizamiah Obs., 1818 ft. -	5 13 48.98 E.	17 25 54.3 N.	- 6 36.6
60	JAMAICA, MONTEGO BAY (Mr. Hall) -	5 11 29.48 W.	18 24 51 N.	- 6 55.9
61	JENA, 512 ft. - - - - -	0 46 21.25 E.	50 55 34.9 N.	-11 21.3
62	JOHANNESBURG, Union Obs., 5924 ft. -	1 52 18.0 E.	26 10 55.2 S.	+ 9 9.8
63	KASAN, Engelhardt Observatory, 322 ft.	3 15 16.5 E.	55 50 20.0 N.	-10 47.3
64	KASAN, University Observatory, 259 ft. -	3 16 29.01 E.	55 47 24.3 N.	-10 47.7
65	KEW, 33 ft. - - - - -	0 1 15.1 W.	51 28 6 N.	-11 18.5
66	KIEL, 154 ft. - - - - -	0 40 35.57 E.	54 20 28.5 N.	-10 59.7
67	KIEW, 587 ft. - - - - -	2 2 0.56 E.	50 27 11.8 N.	-11 23.5
68	KODAIKANAL, 7688 ft. - - - - -	5 9 52.0 E.	10 13 50 N.	- 4 2.3
69	KÖNIGSBERG, 72 ft. - - - - -	1 21 58.97 E.	54 42 50.4 N.	-10 56.8
70	KREMSMÜNSTER, 1260 ft. - - - - -	0 56 31.58 E.	48 3 23.1 N.	-11 31.9
71	LA PLATA, 52 ft. - - - - -	3 51 44.8 W.	34 54 30.5 S.	+10 52.2
72	LEIPZIG, 390 ft. - - - - -	0 49 33.93 E.	51 20 5.9 N.	-11 19.2
73	LEYDEN, 20 ft. - - - - -	0 17 56.15 E.	52 9 20.0 N.	-11 14.6
74	LISBON, Tapada, 308 ft. - - - - -	0 36 44.68 W.	38 42 30.5 N.	-11 18.5
75	LIVERPOOL(BIDSTON, BIRKENHEAD), 200ft.	0 12 17.33 W.	53 24 4.8 N.	-11 6.6
76	LORENZO MARQUES, Campos Roderigues	2 10 22.63 E.	25 58 5.5 S.	+ 9 6.6
77	LUND, 112 ft. - - - - [Obs., 195 ft.	0 52 44.97 E.	55 41 51.6 N.	-10 48.5
78	LYONS, 981 ft. - - - - -	0 19 8.52 E.	45 41 40.9 N.	-11 35.5
79	MADISON, Wis., Washburn Obs., 961 ft. -	5 57 37.90 W.	43 4 36.7 N.	-11 33.9
80	MADRAS, 23 ft. - - - - -	5 20 59.62 E.	13 4 8.0 N.	- 5 5.5

# OBSERVATORIES.

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\* \* The Longitudes are reckoned from the Meridian of Greenwich.

No.	Log. p.	Authority for Longitude.	Authority for Latitude.
41	9.998999	Communicated by Prof. Copeland.	<i>M.N.R.A.S.</i> , January 1907.
42	9.999347	Standard Time comparison by Telegraph.	Meridian Observations.
43	9.999517	Communicated by Mr. P. Lowell.	Communicated by Mr. P. Lowell.
44	9.999303	Albrecht's <i>Compensation</i> .	Commissione Italiana, Milan, 1886.
45	9.999241	Albrecht's <i>Compensation</i> .	Determination by Pidoux.
46	9.999426	<i>Annals of Observatory</i> , No. 1.	<i>The Photochronograph and its applications</i> , 1894.
47	9.998999	<i>M.N.R.A.S.</i> , December 1865.	<i>M.N.R.A.S.</i> , October 1917.
48	9.999418	The American Ephemeris.	The American Ephemeris.
49	9.999121	Albrecht's <i>Compensation</i> .	Communicated by Prof. Harzer.
50	9.999106	Albrecht's <i>Compensation</i> .	Communicated by Prof. Schur.
51	9.999107		Greenwich Observations.
52	9.999057	Albrecht's <i>Compensation</i> .	Observations by Talcott's Method, 1909.
53	9.999398	Communicated by Prof. Collins.	Determination by Sharpless.
54	9.999159	Determination by Becker and Valentiner.	Determination by Becker and Valentiner.
55	9.998901	Albrecht's <i>Compensation</i> .	Determination by Donner.
56	9.999640	Communicated by Mr. Keeling.	Communicated by Mr. Keeling.
57	9.999214	Determination by Von Konkoly and Tetens.	Determination by Von Sterneck.
58	9.999791	Determination by Green, U.S.N.	Determination by Doberck.
59	9.999870	Communicated by Director, 1916.	Communicated by Director, 1916.
60	9.999855	Report on Transit of Venus, 1882.	Report on Transit of Venus, 1882.
61	9.999122	Preussische Landesaufnahme, 1900.	Meridian Observations.
62	9.999717	Observatory Circular, 1916.	Observatory Circular, 1916.
63	9.999001	Communicated by Prof. Dubiago.	Communicated by Prof. Dubiago.
64	9.999001	Bakhuyzen's <i>Compensation</i> .	Observations by Talcott's Method.
65	9.999107	Determination by Balfour Stewart.	Determination by Balfour Stewart.
66	9.999037	Albrecht's <i>Compensation</i> .	Geodätisches Institut of Berlin.
67	9.999133	Albrecht's <i>Compensation</i> .	<i>Annales de l'Observatoire</i> , Tome III.
68	9.999954	Communicated by Director, 1912.	Communicated by Director, 1912.
69	9.999028	Albrecht's <i>Compensation</i> .	<i>Astron. Beobachtungen</i> , Band 38.
70	9.999194	Albrecht's <i>Compensation</i> .	Determination by Tinter.
71	9.999524	Publications of Obs., Vol. V., 1919.	Publications of Obs., Vol. V., 1919.
72	9.999111	Albrecht's <i>Compensation</i> .	Observations with Universal Instrument.
73	9.999090	Albrecht's <i>Compensation</i> .	<i>Annalen der Sternwarte</i> , Band II.
74	9.999431	Determination by Green, U.S.N.	Communicated by Director, July 1911.
75	9.999059	<i>M.N.R.A.S.</i> , November 1894.	<i>M.N.R.A.S.</i> , November 1894.
76	9.999721	Publications of Obs., Vol. II., 1911.	Publications of Obs., Vol. IV., 1912.
77	9.999004	Albrecht's <i>Compensation</i> .	Determination by Engstrom.
78	9.999254	Bakhuyzen's <i>Compensation</i> .	<i>Bulletin Astronomique</i> , Tome XI.
79	9.999320	Communicated by Prof. Comstock.	<i>Publications of Observatory</i> , Vol. VI.
80	9.999926	Great Trigonometrical Survey of India.	Great Trigonometrical Survey of India.

\* \* The Longitudes are reckoned from the Meridian of Greenwich.

No.	Place and Altitude.	Longitude.	Latitude.	Reduction to Geocentric Latitude.
		h m s		
81	MADRID, 2149 ft. - - - - -	0 14 45.09 W.	40° 24' 30.0" N.	- 11 26.4
82	MARSEILLES, 246 ft. - - - - -	0 21 34.55 E.	43 18 17.5 N.	- 11 34.3
83	MAURITIUS, Royal Alfred Obs., 177 ft. -	3 50 12.6 E.	20 5 39 S.	+ 7 27.8
84	MELBOURNE, 92 ft. - - - - -	9 39 54.15 E.	37 49 53.2 S.	+ 11 13.4
85	MILAN, Brera, 394 ft. - - - - -	0 36 45.88 E.	45 27 59.2 N.	- 11 35.6
86	MONTEVIDEO, Obs. Inst. Meteorológico -	3 44 51.4 W.	34 54 33 S.	+ 10 52.2
87	MONTREAL, McGill College, 187 ft. - -	4 54 18.88 W.	45 30 19.1 N.	- 11 35.6
88	MOSCOW, 466 ft. - - - - -	2 30 17.03 E.	55 45 19.5 N.	- 10 48.0
89	MOUNT HAMILTON, Lick Obs., 4209 ft. -	8 6 34.89 W.	37 20 25.6 N.	- 11 10.4
90	MOUNT WILSON OBS., 5900 ft. - - - -	7 52 14.33 W.	34 12 59.5 N.	- 10 46.2
91	MUNICH, Bogenhausen, 1736 ft. - - -	0 46 26.02 E.	48 8 45.5 N.	- 11 31.7
92	NAPLES, Capo di Monte, 538 ft. - - -	0 57 1.70 E.	40 51 46.3 N.	- 11 28.1
93	NEUCHÂTEL, 1601 ft. - - - - -	0 27 49.90 E.	46 59 50.6 N.	- 11 34.1
94	NEW HAVEN, Yale University, 131 ft. -	4 51 40.58 W.	41 19 22.3 N.	- 11 29.7
95	NEW YORK, Columbia University - - -	4 55 53.64 W.	40 45 23.1 N.	- 11 27.7
96	NICE, 1240 ft. - - - - -	0 29 12.15 E.	43 43 16.9 N.	- 11 34.9
97	NICOLAIEFF, 180 ft. - - - - -	2 7 53.78 E.	46 58 22.1 N.	- 11 34.2
98	NORTHFIELD, Carleton College, 938 ft. -	6 12 35.81 W.	44 27 41.6 N.	- 11 35.5
99	ODESSA, 180 ft. - - - - -	2 3 2.04 E.	46 28 36.7 N.	- 11 34.9
100	O'GYALLA (Dr. Von Konkoly), 371 ft. -	1 12 45.60 E.	47 52 27.3 N.	- 11 32.4
101	OTTAWA, 276 ft. - - - - -	5 2 51.98 W.	45 23 39.1 N.	- 11 35.6
102	OXFORD, Radcliffe Observatory, 213 ft. -	0 5 2.6 W.	51 45 35.6 N.	- 11 16.9
103	OXFORD, University Observatory, 210 ft. -	0 5 0.4 W.	51 45 34.2 N.	- 11 16.9
104	PADUA, 102 ft. - - - - -	0 47 29.15 E.	45 24 1.0 N.	- 11 35.6
105	PAISLEY, Coats Observatory, 107 ft. - -	0 17 43.3 W.	55 50 43.8 N.	- 10 47.2
106	PALERMO, 249 ft. - - - - -	0 53 25.87 E.	38 6 44.5 N.	- 11 15.1
107	PARIS, 194 ft. - - - - -	0 9 20.93 E.	48 50 11.2 N.	- 11 29.7
108	PERTH, Western Australia, 197 ft. - - -	7 43 21.74 E.	31 57 7.4 S.	+ 10 23.8
109	PETROGRAD, Academy of Sciences, 10 ft. -	2 1 13.40 E.	59 56 29.7 N.	- 10 4.2
110	POLA, 105 ft. - - - - -	0 55 23.07 E.	44 51 48.7 N.	- 11 35.7
111	POTSDAM, 318 ft. - - - - -	0 52 15.86 E.	52 22 56.0 N.	- 11 13.3
112	PRAGUE, 646 ft. - - - - -	0 57 40.28 E.	50 5 15.8 N.	- 11 25.1
113	PRINCETON, New Jersey, 213 ft. - - -	4 58 37.61 W.	40 20 57.8 N.	- 11 26.2
114	PULKOWA, 246 ft. - - - - -	2 1 18.57 E.	59 46 18.7 N.	- 10 6.2
115	QUEBEC (Time Ball on Mann's Bastion), [307 ft.]	4 44 49.38 W.	46 48 26.2 N.	- 11 34.4
116	RIO DE JANEIRO, 207 ft. - - - - -	2 52 41.4 W.	22 54 23.7 S.	+ 8 17.7
117	ROME, Capitol, 207 ft. - - - - -	0 49 56.34 E.	41 53 33.6 N.	- 11 31.3
118	ROME, Roman College, 194 ft. - - - -	0 49 55.36 E.	41 53 53.6 N.	- 11 31.3
119	ROME, Vatican - - - - -	0 49 49.28 E.	41 54 4.8 N.	- 11 31.3
120	ROUSDON, Devon, 516 ft. - - - - -	0 11 58.94 W.	50 42 38 N.	- 11 22.3

\* \* The Longitudes are reckoned from the Meridian of Greenwich.

No.	Log. p.	Authority for Longitude.	Authority for Latitude.
81	9·999389	<i>Anuario, 1916.</i>	<i>Anuario, 1916.</i>
82	9·999315	Albrecht's <i>Compensation.</i>	Meridian Observations.
83	9·999829	Communicated by Mr. Meldrum.	Communicated by Mr. Meldrum.
84	9·999452	<i>Astronomical Results, Vol. VII.</i>	<i>Astronomical Results, Vol. VII.</i>
85	9·999260	Albrecht's <i>Compensation.</i>	<i>Publications, No. 51, 1914.</i>
86	9·999524	Communicated by Director, 1919.	Communicated by Director, 1919.
87	9·999259	U.S. Coast and Geodetic Survey.	U.S. Coast and Geodetic Survey.
88	9·999003	Albrecht's <i>Compensation.</i>	Determination by Sternberg.
89	9·999465	U.S. Coast and Geodetic Survey.	Determination by Tucker.
90	9·999540	<i>Contributions from Solar Observatory, No. 9.</i>	<i>Contributions from Solar Observatory, No. 9.</i>
91	9·999192	Albrecht's <i>Compensation.</i>	Communicated by Prof. Seeliger.
92	9·999377	Bakhuyzen's <i>Compensation.</i>	Determination by Fergola.
93	9·999220	Bakhuyzen's <i>Compensation.</i>	Berliner Jahrbuch.
94	9·999366	The American Ephemeris.	The American Ephemeris.
95	9·999380	Triangulation from Rutherford's Observatory.	Triangulation from Rutherford's Observatory.
96	9·999304	Albrecht's <i>Compensation.</i>	<i>Annales de l'Observatoire, Tome II.</i>
97	9·999221	Bakhuyzen's <i>Compensation.</i>	Communicated by Prof. Kortazzi.
98	9·999285	Telegraphic connection with Washington.	<i>Publications of Observatory, No. 1.</i>
99	9·999234	Albrecht's <i>Compensation.</i>	Observations in the Prime Vertical.
100	9·999197	Determination by Von Konkoly.	Determination by Lakits.
101	9·999261	Communicated by Director, 1919.	Communicated by Director, 1919.
102	9·999100	Radcliffe Observations, 1842.	Radcliffe Catalogue of Stars, 1900.
103	9·999100	Ordnance Survey.	Ordnance Survey.
104	9·999261	Albrecht's <i>Compensation.</i>	Determination by Ciscato.
105	9·998999	Communicated by Observatory Committee.	Communicated by Observatory Committee.
106	9·999446	Bakhuyzen's <i>Compensation.</i>	Determination by Zqna.
107	9·999174	Albrecht's <i>Compensation.</i>	Determination by Laugier.
108	9·999593	Government Lands and Survey Office, Perth.	Communicated by Mr. W. E. Cooke.
109	9·998906	Triangulation from Pulkowa.	Triangulation from Pulkowa.
110	9·999275	Austrian Gradmessungen-Commission.	Austrian Gradmessungen-Commission.
111	9·999084	Albrecht's <i>Compensation.</i>	<i>Publications of Observatory, Vol. VI.</i>
112	9·999142	Albrecht's <i>Compensation.</i>	<i>Astron. Beobachtungen, 1888-1891.</i>
113	9·999390	The American Ephemeris.	The American Ephemeris.
114	9·998909	Albrecht's <i>Compensation.</i>	<i>Description de l'Observatoire.</i>
115	9·999225	Triangulation from Montreal.	Triangulation from Montreal.
116	9·999780	Determination by Green, U.S.N.	Determination by Green, U.S.N.
117	9·999350	Albrecht's <i>Compensation.</i>	Determination by Respighi.
118	9·999350	Albrecht's <i>Compensation.</i>	Determination by Millosevich.
119	9·999350	Albrecht's <i>Compensation.</i>	Communicated by Sig. Denza.
120	9·999127	Ordnance Survey.	Ordnance Survey.

\* \* The Longitudes are reckoned from the Meridian of Greenwich.

No.	Place and Altitude.	Longitude.	Latitude.	Reduction to Geocentric Latitude.
		<sup>h</sup> <sup>m</sup> <sup>s</sup>		
121	RUGBY, Temple Obs., 384 ft. - - - -	0 5 2.0 W.	52 22' 7" N.	-11 13.4
122	SAN FERNANDO, near CADIZ, 101 ft. - -	0 24 49.30 W.	36 27 42.0 N.	-11 4.3
123	SANTIAGO DE CHILE, 1704 ft. - - - -	4 42 46.3 W.	33 26 42.0 S.	+10 39.0
124	SOUTH KENSINGTON, London, S.W. - -	0 0 41.54 W.	51 29 48.0 N.	-11 18.4
125	STOCKHOLM, 144 ft. - - - - - - -	1 12 13.97 E.	59 20 32.7 N.	-10 11.3
126	STONYHURST, 381 ft. - - - - - - -	0 9 52.68 W.	53 50 40 N.	-11 3.5
127	STRASBURG, 472 ft. - - - - - - -	0 31 4.52 E.	48 35 0.3 N.	-11 30.5
128	SUTTON, SURREY (Mr. Doberck), 167 ft. -	0 0 44.53 W.	51 22 19.8 N.	-11 19.0
129	SYDNEY, 144 ft. - - - - - - -	10 4 49.54 E.	33 51 41.1 S.	+10 42.9
130	TACUBAYA, MEXICO, 7619 ft. - - - -	6 36 46.67 W.	19 24 17.9 N.	- 7 14.9
131	TASCHKENT, 1499 ft. - - - - - - -	4 37 10.82 E.	41 19 31.4 N.	-11 29.7
132	TOKYO - - - - - - -	9 18 58.02 E.	35 39 17.5 N.	-10 58.3
133	TORONTO, 350 ft. - - - - - - -	5 17 34.65 W.	43 39 35.9 N.	-11 34.8
134	TOULOUSE, 636 ft. - - - - - - -	0 5 51.23 E.	43 36 44.0 N.	-11 34.7
135	TRIESTE, 75 ft. - - - - - - -	0 55 3.0 E.	45 38 45.4 N.	-11 35.5
	[197 ft.]			
136	TRIVANDRUM, Maharaja's Observatory,	5 7 59 E.	8 30 32 N.	- 3 22.9
137	TULSE HILL, London (Sir W. Huggins),	0 0 27.7 W.	51 26 47 N.	-11 18.6
138	TURIN, Pino Torinese, 2028 ft. - [174 ft.]	0 31 5.95 E.	45 2 16.3 N.	-11 35.7
139	UPSALA, 69 ft. - - - - - - -	1 10 30.12 E.	59 51 29.4 N.	-10 5.2
140	URBANA, University of Illinois, 774 ft. -	5 52 53.93 W.	40 6 20.2 N.	-11 25.2
141	UTRECHT, 39 ft. - - - - - - -	0 20 30.97 E.	52 5 9.5 N.	-11 15.1
142	VENICE, Istituto di Marina, 49 ft. - - -	0 49 22.12 E.	45 26 10.5 N.	-11 35.6
143	VIENNA, Imperial Observatory, 787 ft. -	1 5 21.35 E.	48 13 55.4 N.	-11 31.5
144	VIENNA, Ottakring (Herr Kuffner),	1 5 10.96 E.	48 12 46.7 N.	-11 31.6
145	WARSAW, 361 ft. - - - - - [935 ft.]	1 24 7.25 E.	52 13 4.6 N.	-11 14.3
146	WASHINGTON, Georgetown Heights, 269 ft.	5 8 15.78 W.	38 55 14.7 N.	-11 19.6
147	WELLINGTON, N.Z., Hector Obs., 416 ft.	11 39 4.27 E.	41 17 3.8 S.	+11 29.5
148	WILHELMSHAVEN, 30 ft. - - - [1099 ft.]	0 32 35.06 E.	53 31 52.2 N.	-11 4.7
149	WILLIAMS BAY, Wis., Yerkes Obs.,	5 54 13.24 W.	42 34 12.6 N.	-11 33.0
150	WINDSOR, N.S.W. (Mr. Tebbutt), 52 ft. -	10 3 20.51 E.	33 36 30.8 S.	+10 40.6
151	ZURICH, 1536 ft. - - - - - - -	0 34 12.26 E.	47 22 38.3 N.	-11 33.5

NOTES:—

Albrecht's Compensation. The reference is to Prof. Albrecht's paper in *Astron. Nachrichten*, No. 399.

Bakhuyzen's Compensation. The reference is to Prof. Bakhuyzen's paper in *Astron. Nachrichten*, No. 3202, the adopted difference of longitude Paris—Greenwich being 9<sup>m</sup> 20<sup>s</sup>.93.



\* \* \* The Longitudes are reckoned from the Meridian of Greenwich.

No.	Log. p.	Authority for Longitude.	Authority for Latitude.
121	9.999084	Ordnance Survey.	Ordnance Survey.
122	9.999486	Telegraphic connection with Madrid.	Transit-Circle Observations.
123	9.999558	Anuario del Observatorio, 1919.	Anuario del Observatorio, 1919.
124	9.999107	Communicated by Sir J. Norman Lockyer.	Communicated by Sir J. Norman Lockyer.
125	9.998919	Communicated by Director, 1913.	Communicated by Director, 1917.
126	9.999049	Chronometrical connection with Liverpool.	Meridian Observations.
127	9.999180	Albrecht's <i>Compensation</i> .	Meridian Observations of Circumpolar Stars.
128	9.999110	Ordnance Survey.	Ordnance Survey.
129	9.999549	Tel. Determination by Ellery, Russell and Todd.	Sydney Astronomical Observations.
130	9.999840	Boletin del Observatorio, No. 4, 1914.	Boletin del Observatorio, No. 4, 1914.
131	9.999366	Communicated by Prof. Gedeonof.	Communicated by Prof. Gedeonof.
132	9.999506	University Calendar, 1892.	University Calendar, 1892.
133	9.999306	Determination by Carpmael.	Determination by Blake.
134	9.999307	Communicated by M. Cosserat.	Determination by Petit.
135	9.999255	Communicated by Dr. F. Anton.	Communicated by Dr. F. Anton.
136	9.999968	Communicated by Director, 1915.	Communicated by Director, 1915.
137	9.999108	Ordnance Survey.	Ordnance Survey.
138	9.999270	<i>Anuario Astronomico</i> , 1917.	<i>Anuario Astronomico</i> , 1917.
139	9.998908	Albrecht's <i>Compensation</i> .	<i>Astron. Nachrichten</i> , No. 2565.
140	9.999396	Communicated by Prof. Joel Stebbins.	Communicated by Prof. Joel Stebbins.
141	9.999092	Triangulation from Leyden.	<i>Astron. Nachrichten</i> , No. 2411.
142	9.999260	Determination by Millosevich.	Determination by Millosevich.
143	9.999189	Albrecht's <i>Compensation</i> .	K. K. Gradmessungs-Bureau.
144	9.999190	Albrecht's <i>Compensation</i> .	<i>Publicationen der Sternwarte</i> , I. und II.
145	9.999089	Albrecht's <i>Compensation</i> .	<i>Astron. Nachrichten</i> , No. 4666 (July 1913).
146	9.999426	U.S. Coast and Geodetic Survey.	<i>Astronomy and Astrophysics</i> , No. 188.
147	9.999366	Transactions of New Zealand Institute, 1914.	Transactions of New Zealand Institute, 1914.
148	9.999057	Albrecht's <i>Compensation</i> .	Zenith Distances of Zenithal Stars.
149	9.999333	Observatory Bulletin, No. 18.	Observatory Bulletin, No. 18.
150	9.999555	Report of Windsor Observatory, 1888.	Observations in the Prime Vertical.
151	9.999211	Bakhuyzen's <i>Compensation</i> .	Communicated by Prof. A. Wolfer.

Directors are requested to notify H.M. *Nautical Almanac* Office if they desire any change made in the information given above concerning their Observatories.

## STANDARD TIMES.

The following Standard Times, referred to the Meridian of Greenwich, have been adopted for railway and other purposes :—

h	m	
11	30	E. New Zealand.
11	0	E. New Caledonia.
10	0	E. Tasmania, Victoria, New South Wales, Queensland, New Guinea.
9	30	E. South Australia.
9	0	E. Japan, Corea.
8	0	E. Western Australia, Portuguese Timor, British North Borneo, Philippine Islands, Macao, Hong Kong, China (Coast), Formosa.
7	0	E. Straits Settlements, Federated Malay States, French Indo-China.
6	30	E. Burma.
5	30	E. India.
5	0	E. Chagos Archipelago, Portuguese India.
4	0	E. Mauritius, Seychelles.
3	0	E. Somaliland, Madagascar.
2	30	E. East African Protectorate.
2	0	E. (East Europe).—Roumania, Bulgaria, Turkey, Greece. Egypt, Portuguese East Africa, South Africa.
1	0	E. (Mid-Europe). — Germany, Luxembourg, Denmark, Sweden, Norway, Switzerland, Italy, Austria-Hungary, Bosnia, Servia, Malta, Portuguese West Africa, South-west Africa, Nigeria.
0	0	(Greenwich).—Great Britain, Ireland, France, Belgium, Spain, Portugal, Gibraltar, Algeria, Farøe Islands.
1	0	W. Iceland, Madeira, Portuguese Guinea, Sierra Leone.
2	0	W. Azores and Cape Verde Islands.
3	0	W. Eastern Brazil.
4	0	W. (Atlantic).—Part of Canada, Leeward Islands, Central Brazil, Chile.
5	0	W. (Eastern).—Parts of Canada and United States, Western Brazil, Peru, Panama, Jamaica, Bahamas.
6	0	W. (Central).—Parts of Canada and United States, Honduras.
7	0	W. (Mountain).—Parts of Canada and United States.
8	0	W. (Pacific).—British Columbia and Part of United States.
9	0	W. Yukon, Alaska.
10	30	W. Sandwich Islands.
11	30	W. Samoa.

The Corrections, according to NEWCOMB, applicable to the Moon's Longitude and Latitude, computed from HANSEN's Tables.

Day.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
1	-39.6	+ 1.8	-39.1	+ 3.5	-39.3	+ 3.7	-41.7	+ 2.7	-44.4	+ 0.5	-46.8	- 3.1
2	39.1	2.4	39.4	3.6	39.7	3.6	42.7	2.0	45.2	- 0.5	47.0	3.7
3	38.9	2.8	40.1	3.5	40.3	3.5	43.6	1.2	45.9	- 1.5	47.1	4.2
4	-39.0	+ 3.2	-41.0	+ 3.4	-41.1	+ 3.1	-44.8	+ 0.2	-46.6	- 2.5	-47.1	- 4.3
5	39.4	3.4	42.4	2.9	42.3	2.5	46.1	- 0.8	47.3	3.3	47.0	4.1
6	40.2	3.6	44.0	2.3	43.7	1.8	47.3	1.9	47.9	4.0	46.9	3.7
7	-41.3	+ 3.5	-45.8	+ 1.5	-45.1	+ 0.8	-48.3	- 2.9	-48.3	- 4.3	-46.5	- 2.9
8	42.7	3.3	47.3	+ 0.6	46.8	- 0.1	49.3	3.6	48.5	4.4	46.0	2.1
9	44.2	2.8	48.8	- 0.4	48.2	- 1.2	49.7	4.2	48.4	4.1	45.3	1.2
10	-45.9	+ 2.1	-49.9	- 1.4	-49.4	- 2.2	-49.8	- 4.4	-48.1	- 3.6	-44.4	- 0.4
11	47.3	1.4	50.5	2.4	50.2	3.1	49.6	4.4	47.2	2.9	43.4	+ 0.5
12	48.6	+ 0.4	50.7	3.3	50.6	3.9	48.9	4.0	46.2	2.0	42.3	+ 1.3
13	-49.4	- 0.6	-50.3	- 3.9	-50.6	- 4.2	-47.8	- 3.5	-45.0	- 1.1	-41.3	+ 1.8
14	49.8	1.6	49.4	4.2	50.0	4.4	46.5	2.7	43.8	- 0.3	40.4	2.4
15	49.7	2.5	48.3	4.3	49.0	4.3	45.1	1.8	42.5	+ 0.6	39.8	2.9
16	-49.2	- 3.3	-46.8	- 4.0	-47.6	- 3.9	-43.6	- 0.9	-41.4	+ 1.4	-39.4	+ 3.2
17	48.3	3.8	45.3	3.6	46.2	3.2	42.2	0.0	40.4	1.9	39.3	3.4
18	47.2	4.0	43.9	2.8	44.6	2.4	41.1	+ 0.8	39.6	2.3	39.7	3.4
19	-46.0	- 4.1	-42.6	- 2.1	-43.1	- 1.5	-40.2	+ 1.5	-39.3	+ 2.7	-40.3	+ 3.3
20	44.7	3.9	41.6	1.3	41.8	- 0.7	39.5	2.2	39.3	3.2	41.2	3.2
21	43.6	3.4	40.7	- 0.3	40.8	+ 0.3	39.2	2.7	39.6	3.4	42.4	2.8
22	-42.7	- 2.7	-40.2	+ 0.5	-40.0	+ 1.1	-39.2	+ 3.1	-40.2	+ 3.6	-43.6	+ 2.3
23	41.9	1.8	39.8	1.2	39.6	1.7	39.5	3.4	40.9	3.5	44.9	1.6
24	41.3	1.0	39.5	1.8	39.3	2.3	39.9	3.6	41.9	3.3	46.0	+ 0.8
25	-40.8	- 0.2	-39.4	+ 2.4	-39.2	+ 2.8	-40.5	+ 3.6	-42.7	+ 2.9	-46.9	- 0.1
26	40.4	+ 0.6	39.3	2.9	39.3	3.2	41.0	3.6	43.7	2.3	47.5	1.1
27	40.0	1.3	39.1	3.2	39.4	3.5	41.7	3.3	44.6	1.5	47.8	2.1
28	-39.7	+ 1.9	-39.2	+ 3.5	-39.8	+ 3.7	-42.3	+ 2.9	-45.3	+ 0.7	-47.9	- 2.9
29	39.4	2.4	-39.3	+ 3.7	40.0	3.7	42.9	2.2	45.8	- 0.2	47.8	3.7
30	39.1	2.8			40.5	3.6	43.7	1.4	46.3	- 1.2	47.5	4.1
31	-39.0	+ 3.2			-41.0	+ 3.3	-44.4	+ 0.5	-46.6	- 2.4	-47.1	- 4.3
32	-39.1	+ 3.5			-41.7	+ 2.7			-46.8	- 3.1		

The Corrections, according to NEWCOMB, applicable to the Moon's Longitude and Latitude, computed from HANSEN'S Tables.

Day.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
1	-47.1	-4.3	-45.0	-2.7	-41.9	+1.0	-40.2	+2.7	-39.6	+3.6	-40.8	+2.8
2	46.6	4.1	44.1	1.5	41.2	1.8	39.7	3.2	39.9	3.5	41.6	2.4
3	46.1	3.7	43.4	-0.6	40.7	2.4	39.6	3.5	40.3	3.3	42.5	1.8
4	-45.6	-3.0	-42.7	+0.4	-40.2	+3.0	-39.6	+3.6	-40.8	+2.9	-43.2	+1.1
5	45.1	2.2	42.0	1.2	39.9	3.3	39.6	3.7	41.4	2.4	43.9	+0.2
6	44.6	1.3	41.5	1.9	39.7	3.5	39.8	3.5	41.9	1.8	44.5	-0.6
7	-44.0	-0.5	-40.9	+2.5	-39.5	+3.6	-40.1	+3.3	-42.5	+1.0	-45.1	-1.6
8	43.3	+0.4	40.4	3.0	39.5	3.6	40.5	2.8	43.2	+0.1	45.6	2.5
9	42.6	1.2	40.0	3.3	39.5	3.4	40.9	2.3	43.9	-0.8	46.2	3.2
10	-41.8	+1.9	-39.5	+3.4	-39.8	+3.1	-41.4	+1.6	-44.6	-1.8	-46.7	-3.9
11	41.1	2.4	39.4	3.5	40.4	2.7	42.3	+0.8	45.6	2.7	47.1	4.2
12	40.3	2.9	39.3	3.5	41.0	2.0	43.3	-0.1	46.6	3.5	47.7	4.3
13	-39.7	+3.2	-39.6	+3.3	-42.1	+1.3	-44.5	-1.1	-47.5	-4.0	-48.1	-4.0
14	39.3	3.4	40.2	3.0	43.4	+0.4	45.8	2.1	48.4	4.4	48.3	3.5
15	39.3	3.5	41.1	2.5	44.8	-0.5	47.2	3.0	49.3	4.4	48.4	2.8
16	-39.6	+3.4	-42.3	+1.8	-46.4	-1.5	-48.5	-3.8	-49.7	-4.0	-48.3	-1.8
17	40.2	3.2	43.8	1.0	48.0	2.4	49.6	4.2	49.9	3.4	47.8	-0.8
18	41.2	2.8	45.4	+0.2	49.4	3.3	50.4	4.5	49.7	2.7	47.1	+0.1
19	-42.5	+2.3	-46.9	-0.8	-50.4	-3.9	-50.9	-4.4	-49.0	-1.6	-46.1	+1.1
20	43.9	1.7	48.4	1.8	51.0	4.4	50.9	4.0	48.0	-0.8	44.9	1.9
21	45.4	+0.9	49.7	2.7	51.3	4.6	50.4	3.4	46.7	+0.2	43.6	2.5
22	-46.8	0.0	-50.4	-3.5	-50.9	-4.3	-49.4	-2.5	-45.3	+1.1	-42.4	+2.9
23	48.0	-0.9	50.8	4.1	50.2	3.9	48.2	1.6	43.8	1.9	41.4	3.3
24	48.9	1.9	50.7	4.4	49.0	3.1	46.7	-0.6	42.4	2.5	40.5	3.4
25	-49.3	-2.8	-50.0	-4.4	-47.5	-2.2	-45.1	+0.4	-41.2	+2.9	-39.9	+3.4
26	49.6	3.5	49.2	4.2	46.0	1.3	43.4	1.2	40.3	3.2	39.7	3.3
27	49.3	4.1	48.0	3.6	44.5	-0.3	42.0	2.0	39.8	3.4	39.9	3.1
28	-48.8	-4.3	-46.6	-2.8	-43.0	+0.7	-40.9	+2.6	-39.6	+3.5	-40.4	+2.8
29	47.9	4.3	45.3	1.9	41.8	1.5	40.1	3.1	39.8	3.4	41.2	2.3
30	47.0	3.9	44.0	-0.9	40.8	2.3	39.6	3.5	40.2	3.2	42.2	1.8
31	-46.0	-3.3	-42.9	+0.1	-40.2	+2.7	-39.4	+3.5	-40.8	+2.8	-43.3	+1.1
32	-45.0	-2.7	-41.9	+1.0			-39.6	+3.6			-44.3	+0.2

## EXPLANATION OF THE ARTICLES

CONTAINED IN

THE NAUTICAL ALMANAC AND ASTRONOMICAL  
EPHEMERIS FOR THE YEAR 1922.

THE necessarily concise headings in the body of the Almanac in many cases leave the precise meaning of the quantity tabulated in some uncertainty. Very little further explanation is likely to be required by a reader who consults (a) the tables of the Sun, Moon, and Planets, and the Star Catalogues quoted in the Preface ; (b) the explanation given in foreign almanacs of the matter supplied by them to this Almanac ; (c) a section at the end of the Almanac for 1918, which will be here quoted as " Derivation." This section will be reprinted at intervals with changes incorporated.

*Ephemeris of Sun and Moon.* (Pages 1 to 145.)

" Derivation," Nos. 1 to 25, may be consulted.

*Planetary Ephemerides.* (Pages 146 to 189.)

In the " Derivation," Nos. 26 to 31, Mars is taken for purposes of illustration. Further statements are necessary as follows :—

Heliocentric places for the planets from Venus to Neptune are to be found in Appendices to the Almanacs for 1915 to 1917.

In the case of Jupiter and Saturn the times of passage over the meridian and the polar semidiameters have been calculated on the assumption, only approximately true, that the extremities of the axes of rotation are the north and south points of the discs.

The transit ephemerides for Mars, Jupiter, and Saturn extend from transit at 20<sup>h</sup> to transit at 4<sup>h</sup> ; for Uranus and Neptune from transit at 15<sup>h</sup> to transit to 4<sup>h</sup> ; for Venus the transit is given for every day, the apparent solar day being intended.

*Sun's Co-ordinates.* (Pages 190 to 197.)

" Derivation," Nos. 32 and 33, may be consulted.

*Precession, Nutation, etc.* (Pages 198 to 201.)

" Derivation," Nos. 34 to 39, may be consulted.

*Stars.* (Pages 202 to 431.)

"Derivation," Nos. 40 to 51, may be consulted, and also the explanations of other Almanacs.

The magnitudes have been determined on the assumption that the average magnitude of  $\alpha$  Ursæ Minoris, if observed in the Zenith, would be 2.15, and that the light given by a star of magnitude  $m$  is  $r$  times that given by one of magnitude  $m+1$ , where  $\log r=0.4$ .

The magnitudes of the two stars  $\alpha$  Argûs and Sirius are indicated by negative quantities, showing that they are brighter than a star whose magnitude is 0.0.

The Spectra have been taken from a manuscript list forwarded by Professor Pickering. The system of classification is that of *Revised Harvard Photometry* (*Annals of Harvard College Observatory*, vol. 50), from which the following explanation is taken :—

"The nomenclature adopted is that first used in the *Draper Catalogue*, H.A., vol. 27, modified and extended to satisfy the facts, as the study of the spectrum of the stars developed. Stars of Types I., II., and III., according to the designations of Secchi, are here denoted by the letters A, K, and M. Two well-marked classes between A and K are called F and G. Stars of the Orion or helium type, which contain well-marked helium lines in addition to the Orion lines, are called B. Nearly all the stars can be arranged in a sequence, according to the classes B, A, F, G, K, and M. Peculiar spectra are indicated by Pec. A more detailed study of the spectra showed that many of them fell between these classes. They are indicated by a number following the first class. Thus, B<sub>2</sub>A, abridged to B<sub>2</sub>, denotes a spectrum nearly like that of class B, but estimated to be two-tenths of the way from B to A. K<sub>5</sub> denotes a star midway between K and M. Stars of the fourth and fifth type are designated by the letters N and O respectively. Class M has been divided into the sub-classes Ma, Mb, Mc, and Md . . . . . Class O has been divided into the sub-classes Oa, Ob, Oc, Od, and Oe . . . . . O really precedes B in the sequence, so that Oe<sub>5</sub> denotes Oe<sub>5</sub>B. This classification is fully described in Volume 28, p. 146 . . . . . For stars having a slight peculiarity, the Class followed by the letter  $p$  is used instead of Pec."

Bo, Ao . . . . . are, however, now usually employed for B, A. . . . .

At the foot of each page of Apparent Places of Stars are inserted the respective mean places, together with the natural secant and tangent of the mean declination of each star. Additional facility is thus afforded for the reduction of observations.

At the foot of the column on pages 277 to 431 are given quantities designated  $L_a$ ,  $L_\delta$ ,  $\omega_a$ ,  $\omega_\delta$  to facilitate the calculation of the small parts of the star correction arising from the nutations,  $dL$ ,  $d\omega$ , tabulated on pages 198 to 201.

The formulæ for these four quantities are

$$L_a = \sin \alpha \sin \omega \tan \delta \div 15$$

$$L_\delta = \sin \omega \cos \alpha$$

$$\omega_a = -\cos \alpha \tan \delta \div 15$$

$$\omega_\delta = \sin \alpha$$

The formulæ to be used for further correction to the apparent places are

$$\begin{aligned} d\alpha &= dL \times L\alpha + d\omega \times \omega\alpha + f' \\ d\delta &= dL \times L\delta + d\omega \times \omega\delta. \end{aligned}$$

The numerical values of  $f'$  are given on pages 223 to 230.

*Moon-culminating Stars.* (Pages 432 to 460.)

“Derivation,” No. 52, may be consulted.

The Right Ascension of the Moon’s bright limb and Declination of the centre are given.

The Moon’s age in days is given in the same column with the magnitudes of the stars.

*Eclipses.* (Pages 461 to 470.)

The explanations of the American Ephemeris and the *Connaissance des Temps* may be consulted.

The Besselian Solar Eclipse Elements have the following geometrical signification:—

The fundamental plane is the plane passing through the centre of the Earth perpendicular to the axis of the Moon’s shadow, *i.e.* to the right line joining the centres of the Sun and Moon. The intersection of the fundamental plane with the Earth’s Equator is taken as the axis of  $x$ , and the axis of  $y$  is perpendicular to it and directed towards the North, the Earth’s centre being the origin of co-ordinates; so that  $x$  and  $y$  are the co-ordinates of the point in which the axis of the shadow intersects the fundamental plane. The angle  $d$  is the declination of the point in which the axis of the shadow (in the direction Earth, Moon, Sun) intersects the celestial sphere. The angle  $\mu$  is the Greenwich hour-angle of this same point.

The quantities  $l_1$ ,  $l_2$  are the radii of the shadow-cones upon the fundamental plane,  $l_1$  corresponding to the penumbra and  $l_2$  to the umbra or shadow. The latter is regarded as positive for an annular, and negative for a total Eclipse.

The values of the log tangents of the semi-angles of the shadow-cones of the penumbra and shadow respectively are also given.

The remaining quantities  $x'$ ,  $y'$ , and  $\mu'$  are, respectively, the changes of  $x$ ,  $y$ , and  $\mu$  in one minute of mean time.

*Occultations.* (Pages 471 to 516.)

The explanation of the American Ephemeris should be consulted, and also “Derivation,” No. 53.

*Jupiter's Satellites.* (Pages 518 to 542.)

The explanation of the *Connaissance des Temps* should be consulted.

In the Tables of Configurations the direction of the motion of the satellites is towards the numerals. White circles at the side of the tables denote transits in progress ; black circles occultations or eclipses.

*Satellites of Mars, Saturn, Uranus, and Neptune.* (Pages 517, 543 to 547, and 549 to 551.)

The explanation of the American Ephemeris should be consulted.

*Rings of Saturn.* (Page 548.)

This page gives the apparent size and orientation of Saturn's Rings and the planetocentric position of the Earth and Sun relatively to the plane of the Rings.

$a$  and  $b$  are the axes of the outer ellipse of the outer ring.

$P$  is the angle which the minor axis of the Ring-ellipse makes with the Declination circle passing through the middle point of Saturn ; + East, — West.

$B$  is the angular elevation of the Earth above the plane of the Rings, as seen from Saturn ; + North, — South.

$B'$  is the angular elevation of the Sun above the plane of the Rings, as seen from Saturn ; + North, — South.

$U$  is the Geocentric Longitude of Saturn reckoned on the plane of the Rings from the Ascending Node of the Ring on the Equator.

$U'$  is the Heliocentric Longitude of Saturn, reckoned on the plane of the Rings, from the ascending Node of the Ring on the Ecliptic.

$\omega$  is the angular distance in the plane of the Rings from their ascending Node on the Earth's Equator to their Ascending Node on the Ecliptic.

The factor to be multiplied by  $a$  and  $b$  to obtain the axes of—

The inner ellipse of the outer ring = 0.8801	log factor = 9.9445.
The outer ellipse of the inner ring = 0.8599	log factor = 9.9344
The inner ellipse of the inner ring = 0.6650	log factor = 9.8228.
The inner ellipse of the dusky ring = 0.5486	log factor = 9.7392.



*Phenomena.* (Pages 552 and 553.)

The conjunction of planet with planet is given only when the difference of declination does not exceed  $3^\circ$ ; that of planet with star when the difference does not exceed  $10'$ .

In computing the time of greatest brilliancy of Venus it is assumed that the brilliancy varies as  $\frac{(r+\Delta+R)(r+\Delta-R)}{r^3\Delta^3}$ , where  $r$  and  $R$  are the radii vectores of Venus and of the Earth respectively, and  $\Delta$  is the distance of Venus from the Earth.

*Physical Ephemeris of the Sun.* (Page 554.)

$P$  is the position-angle of the Sun's axis,  $B_0$  the heliographical latitude of the Earth and  $L_0$  the heliographical longitude of the centre of the disc.

*Moon's Equator, Orbit, and Mean Longitude.* (Page 555.)

The Moon's Equator descends upon the ecliptic at a constant angle at the point where the Moon's Orbit ascends upon the ecliptic.

$\Omega$  is the longitude of this point.

$\Omega'$  is the right ascension of the Ascending Node of the Moon's Equator upon the Earth's Equator.

$i$  is the inclination of the two equators.

$\Delta + 180^\circ$  is the distance from the Ascending Node of the Moon's Equator upon the Earth's Equator to the Ascending Node of the Moon's Orbit upon the ecliptic.

The mean longitude of the Moon's Perigee  $\Gamma'$  and the Moon's mean longitude are given in a slightly different manner upon page 1.

*Physical Ephemeris of the Moon.* (Pages 556 to 563.)

"Derivation," No. 54, may be consulted.

$C$  is the position-angle of the northern extremity of the Moon's axis.

*Physical Ephemerides of Mercury and Venus.* (Pages 564 and 565.)

$k$  the fraction of the whole disc illuminated.

$i$  the angle between Earth and Sun as seen from the planet.

$\theta$  the position-angle of the line of cusps.

$L$  the brilliancy of the disc.

*Physical Ephemeris of Mars.* (Pages 566 to 573.)

$P$  is the position-angle of the axis of rotation,  $A\oplus$ ,  $A\odot$ , the planetocentric Right Ascension of the Earth and Sun respectively, reckoned in the plane of the planet's Equator from the vernal Equinox of the planet's Northern Hemisphere,

$D\oplus$ ,  $D\odot$  are the planetocentric declinations of the Earth and Sun,

$\odot \delta$  the planetocentric longitude of the Sun in the plane of the planet's orbit,

$k$  the fraction of the whole disc illuminated,

$i$  the angular distance of Earth and Sun as seen from the planet,

$q$ ,  $Q$  the amount and position-angle of the greatest defect of illumination.

*Physical Ephemeris of Jupiter.* (Pages 574 to 579.)

The correction for phase is applicable to the central meridian.

*Days elapsed of the Julian Period at Mean Noon.* (Page 586.)

The Julian Period is a period of 7980 years, the year A.D. 1 corresponding to the year 4714 of the period, or the year 0 (B.C. 1) to the year 4713 of the period. The year 1922, therefore, corresponds to the year 6635 of the Julian Period.

As the year 0 corresponds to the year 4713 of the period, at the commencement of the year 0, there have elapsed 4712 years, or 1,721,058 days of the period. It is on this basis that the Table has been calculated. The Table gives the number of days of the period elapsed at the commencement of each fourth year of our era, from the year 0 to the year 1996. In the construction of the Table it has been assumed that the Gregorian reformation of the Calendar was introduced in the year 1582.

*Geocentric Co-ordinates.* (Page 587.)

This page contains a Table for computing the geocentric latitude and log. radius of a place on the Earth's surface, the geographical latitude of which is known. The Table is adapted to a compression of  $\frac{1}{297.0}$ .

*Observatories.* (Pages 588 to 595.)

These pages contain a list of the *Longitudes and Latitudes of the principal Public and Private Observatories*, together with the Reduction of the Geographical to the Geocentric Latitude and the logarithm of the Earth's Radius for sea level for the position of each Observatory, computed with an assumed compression of one part in 297.0.

*Standard Times.* (Page 596.)

A list of Standard Times in use at various places is given.

*Newcomb's Corrections.* (Pages 597 and 598.)

"Derivation" No. 60 may be consulted.

## ADMIRALTY CHARTS AND SAILING DIRECTIONS.

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THE Official catalogue of charts published by the Admiralty, issued annually in March, can be obtained free of charge on application to the Admiralty agent for the sale of these Works, J. D. Potter, 145, Minories, London, E. 1.

Following the publication of the catalogue, a weekly list is printed of additional charts and sailing directions issued from the Hydrographic Department. These weekly lists can also be obtained free of charge from J. D. Potter.

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